

SEQUENCE LISTING

<110> Steinman, Ralph
 Nussenzweig, Michel
 Hawiger, Daniel
 Bonifaz, Laura

<120> Enhanced Antigen Delivery and Modulation
 of the Immune Response Therefrom

<130> 600-1-081CONCIP1

<150> 09/925,284

<151> 2001-08-09

<150> 09/586,704

<151> 2000-06-05

<150> PCT/US96/01383

<151> 1996-01-31

<150> 08/381,528

<151> 1995-01-31

<160> 37

<170> FastSEQ for Windows Version 4.0

<210> 1

<211> 30

<212> PRT

<213> homo sapiens

<400> 1

Arg	His	Arg	Leu	His	Leu	Ala	Gly	Phe	Ser	Ser	Val	Arg	Tyr	Ala	Gln
1				5					10					15	
Gly	Val	Asn	Glu	Asp	Glu	Ile	Met	Leu	Pro	Ser	Phe	His	Asp		
			20					25					30		

<210> 2

<211> 25

<212> PRT

<213> homo sapiens

<400> 2

Ser	Glu	Ser	Ser	Gly	Asn	Asp	Pro	Phe	Thr	Ile	Val	His	Glu	Asn	Thr
1				5					10					15	
Gly	Lys	Cys	Ile	Gln	Pro	Leu	Phe	Asp							
			20					25							

<210> 3

<211> 1723

<212> PRT

<213> mus musculus

<400> 3

Met	Arg	Thr	Gly	Arg	Val	Thr	Pro	Gly	Leu	Ala	Ala	Gly	Leu	Leu	Leu
1				5					10					15	
Leu	Leu	Leu	Arg	Ser	Phe	Gly	Leu	Val	Glu	Pro	Ser	Glu	Ser	Ser	Gly
			20					25					30		
Asn	Asp	Pro	Phe	Thr	Ile	Val	His	Glu	Asn	Thr	Gly	Lys	Cys	Ile	Gln
		35					40					45			
Pro	Leu	Ser	Asp	Trp	Val	Val	Ala	Gln	Asp	Cys	Ser	Gly	Thr	Asn	Asn
	50					55					60				
Met	Leu	Trp	Lys	Trp	Val	Ser	Gln	His	Arg	Leu	Phe	His	Leu	Glu	Ser
65					70					75					80
Gln	Lys	Cys	Leu	Gly	Leu	Asp	Ile	Thr	Lys	Ala	Thr	Asp	Asn	Leu	Arg
				85					90					95	
Met	Phe	Ser	Cys	Asp	Ser	Thr	Val	Met	Leu	Trp	Trp	Lys	Cys	Glu	His
			100					105					110		
His	Ser	Leu	Tyr	Thr	Ala	Ala	Gln	Tyr	Arg	Leu	Ala	Leu	Lys	Asp	Gly
		115					120					125			
Tyr	Ala	Val	Ala	Asn	Thr	Asn	Thr	Ser	Asp	Val	Trp	Lys	Lys	Gly	Gly
	130					135					140				
Ser	Glu	Glu	Asn	Leu	Cys	Ala	Gln	Pro	Tyr	His	Glu	Ile	Tyr	Thr	Arg
145					150					155					160
Asp	Gly	Asn	Ser	Tyr	Gly	Arg	Pro	Cys	Glu	Phe	Pro	Phe	Leu	Ile	Gly
				165					170					175	
Glu	Thr	Trp	Tyr	His	Asp	Cys	Ile	His	Asp	Glu	Asp	His	Ser	Gly	Pro
		180						185					190		
Trp	Cys	Ala	Thr	Thr	Leu	Ser	Tyr	Glu	Tyr	Asp	Gln	Lys	Trp	Gly	Ile
	195						200					205			
Cys	Leu	Leu	Pro	Glu	Ser	Gly	Cys	Glu	Gly	Asn	Trp	Glu	Lys	Asn	Glu
	210					215					220				
Gln	Ile	Gly	Ser	Cys	Tyr	Gln	Phe	Asn	Asn	Gln	Glu	Ile	Leu	Ser	Trp
225					230					235					240
Lys	Glu	Ala	Tyr	Val	Ser	Cys	Gln	Asn	Gln	Gly	Ala	Asp	Leu	Leu	Ser
				245					250					255	
Ile	His	Ser	Ala	Ala	Glu	Leu	Ala	Tyr	Ile	Thr	Gly	Lys	Glu	Asp	Ile
			260					265					270		
Ala	Arg	Leu	Val	Trp	Leu	Gly	Leu	Asn	Gln	Leu	Tyr	Ser	Ala	Arg	Gly
	275						280					285			
Trp	Glu	Trp	Ser	Asp	Phe	Arg	Pro	Leu	Lys	Phe	Leu	Asn	Trp	Asp	Pro
	290					295					300				
Gly	Thr	Pro	Val	Ala	Pro	Val	Ile	Gly	Gly	Ser	Ser	Cys	Ala	Arg	Met
305					310					315					320
Asp	Thr	Glu	Ser	Gly	Leu	Trp	Gln	Ser	Val	Ser	Cys	Glu	Ser	Gln	Gln
				325					330					335	
Pro	Tyr	Val	Cys	Lys	Lys	Pro	Leu	Asn	Asn	Thr	Leu	Glu	Leu	Pro	Asp
		340						345					350		
Val	Trp	Thr	Tyr	Thr	Asp	Thr	His	Cys	His	Val	Gly	Trp	Leu	Pro	Asn
	355						360					365			
Asn	Gly	Phe	Cys	Tyr	Leu	Leu	Ala	Asn	Glu	Ser	Ser	Ser	Trp	Asp	Ala
	370					375					380				
Ala	His	Leu	Lys	Cys	Lys	Ala	Phe	Gly	Ala	Asp	Leu	Ile	Ser	Met	His
385					390					395					400
Ser	Leu	Ala	Asp	Val	Glu	Val	Val	Val	Thr	Lys	Leu	His	Asn	Gly	Asp
				405					410					415	
Val	Lys	Lys	Glu	Ile	Trp	Thr	Gly	Leu	Lys	Asn	Thr	Asn	Ser	Pro	Ala
			420					425					430		

Leu	Phe	Gln	Trp	Ser	Asp	Gly	Thr	Glu	Val	Thr	Leu	Thr	Tyr	Trp	Asn		
		435					440					445					
Glu	Asn	Glu	Pro	Ser	Val	Pro	Phe	Asn	Lys	Thr	Pro	Asn	Cys	Val	Ser		
		450					455					460					
Tyr	Leu	Gly	Lys	Leu	Gly	Gln	Trp	Lys	Val	Gln	Ser	Cys	Glu	Lys	Lys		
465					470					475					480		
Leu	Arg	Tyr	Val	Cys	Lys	Lys	Lys	Gly	Glu	Ile	Thr	Lys	Asp	Ala	Glu		
				485					490					495			
Ser	Asp	Lys	Leu	Cys	Pro	Pro	Asp	Glu	Gly	Trp	Lys	Arg	His	Gly	Glu		
			500					505					510				
Thr	Cys	Tyr	Lys	Ile	Tyr	Glu	Lys	Glu	Ala	Pro	Phe	Gly	Thr	Asn	Cys		
		515					520					525					
Asn	Leu	Thr	Ile	Thr	Ser	Arg	Phe	Glu	Gln	Glu	Phe	Leu	Asn	Tyr	Met		
	530					535					540						
Met	Lys	Asn	Tyr	Asp	Lys	Ser	Leu	Arg	Lys	Tyr	Phe	Trp	Thr	Gly	Leu		
545					550					555					560		
Arg	Asp	Pro	Asp	Ser	Arg	Gly	Glu	Tyr	Ser	Trp	Ala	Val	Ala	Gln	Gly		
				565					570					575			
Val	Lys	Gln	Ala	Val	Thr	Phe	Ser	Asn	Trp	Asn	Phe	Leu	Glu	Pro	Ala		
			580					585					590				
Ser	Pro	Gly	Gly	Cys	Val	Ala	Met	Ser	Thr	Gly	Lys	Thr	Leu	Gly	Lys		
		595					600					605					
Trp	Glu	Val	Lys	Asn	Cys	Arg	Ser	Phe	Arg	Ala	Leu	Ser	Ile	Cys	Lys		
	610					615					620						
Lys	Val	Ser	Glu	Pro	Gln	Glu	Pro	Glu	Glu	Ala	Ala	Pro	Lys	Pro	Asp		
625					630					635					640		
Asp	Pro	Cys	Pro	Glu	Gly	Trp	His	Thr	Phe	Pro	Ser	Ser	Leu	Ser	Cys		
				645					650					655			
Tyr	Lys	Val	Phe	His	Ile	Glu	Arg	Ile	Val	Arg	Lys	Arg	Asn	Trp	Glu		
		660						665					670				
Glu	Ala	Glu	Arg	Phe	Cys	Gln	Ala	Leu	Gly	Ala	His	Leu	Pro	Ser	Phe		
		675					680					685					
Ser	Arg	Arg	Glu	Glu	Ile	Lys	Asp	Phe	Val	His	Leu	Leu	Lys	Asp	Gln		
		690				695					700						
Phe	Ser	Gly	Gln	Arg	Trp	Leu	Trp	Ile	Gly	Leu	Asn	Lys	Arg	Ser	Pro		
705					710					715					720		
Asp	Leu	Gln	Gly	Ser	Trp	Gln	Trp	Ser	Asp	Arg	Thr	Pro	Val	Ser	Ala		
				725					730					735			
Val	Met	Met	Glu	Pro	Glu	Phe	Gln	Gln	Asp	Phe	Asp	Ile	Arg	Asp	Cys		
			740					745					750				
Ala	Ala	Ile	Lys	Val	Leu	Asp	Val	Pro	Trp	Arg	Arg	Val	Trp	His	Leu		
		755					760					765					
Tyr	Glu	Asp	Lys	Asp	Tyr	Ala	Tyr	Trp	Lys	Pro	Phe	Ala	Cys	Asp	Ala		
	770					775					780						
Lys	Leu	Glu	Trp	Val	Cys	Gln	Ile	Pro	Lys	Gly	Ser	Thr	Pro	Gln	Met		
785					790					795					800		
Pro	Asp	Trp	Tyr	Asn	Pro	Glu	Arg	Thr	Gly	Ile	His	Gly	Pro	Pro	Val		
				805					810					815			
Ile	Ile	Glu	Gly	Ser	Glu	Tyr	Trp	Phe	Val	Ala	Asp	Pro	His	Leu	Asn		
		820						825					830				
Tyr	Glu	Glu	Ala	Val	Leu	Tyr	Cys	Ala	Ser	Asn	His	Ser	Phe	Leu	Ala		
		835					840					845					
Thr	Ile	Thr	Ser	Phe	Thr	Gly	Leu	Lys	Ala	Ile	Lys	Asn	Lys	Leu	Ala		
		850				855					860						
Asn	Ile	Ser	Gly	Glu	Glu	Gln	Lys	Trp	Trp	Val	Lys	Thr	Ser	Glu	Asn		
865				870						875					880		
Pro	Ile	Asp	Arg	Tyr	Phe	Leu	Gly	Ser	Arg	Arg	Arg	Leu	Trp	His	His		

				885					890				895			
Phe	Pro	Met	Thr	Phe	Gly	Asp	Glu	Cys	Leu	His	Met	Ser	Ala	Lys	Thr	
			900					905					910			
Trp	Leu	Val	Asp	Leu	Ser	Lys	Arg	Ala	Asp	Cys	Asn	Ala	Lys	Leu	Pro	
		915					920					925				
Phe	Ile	Cys	Glu	Arg	Tyr	Asn	Val	Ser	Ser	Leu	Glu	Lys	Tyr	Ser	Pro	
	930					935					940					
Asp	Pro	Ala	Ala	Lys	Val	Gln	Cys	Thr	Glu	Lys	Trp	Ile	Pro	Phe	Gln	
945				950					955						960	
Asn	Lys	Cys	Phe	Leu	Lys	Val	Asn	Ser	Gly	Pro	Val	Thr	Phe	Ser	Gln	
			965						970					975		
Ala	Ser	Gly	Ile	Cys	His	Ser	Tyr	Gly	Gly	Thr	Leu	Pro	Ser	Val	Leu	
		980						985				990				
Ser	Arg	Gly	Glu	Gln	Asp	Phe	Ile	Ser	Leu	Leu	Pro	Glu	Met	Glu		
		995					1000				1005					
Ala	Ser	Leu	Trp	Ile	Gly	Leu	Arg	Trp	Thr	Ala	Tyr	Glu	Arg	Ile	Asn	
	1010					1015					1020					
Arg	Trp	Thr	Asp	Asn	Arg	Glu	Leu	Thr	Tyr	Ser	Asn	Phe	His	Pro	Leu	
1025				1030						1035					1040	
Leu	Val	Gly	Arg	Arg	Leu	Ser	Ile	Pro	Thr	Asn	Phe	Phe	Asp	Asp	Glu	
			1045						1050					1055		
Ser	His	Phe	His	Cys	Ala	Leu	Ile	Leu	Asn	Leu	Lys	Lys	Ser	Pro	Leu	
		1060					1065				1070					
Thr	Gly	Thr	Trp	Asn	Phe	Thr	Ser	Cys	Ser	Glu	Arg	His	Ser	Leu	Ser	
	1075					1080					1085					
Leu	Cys	Gln	Lys	Tyr	Ser	Glu	Thr	Glu	Asp	Gly	Gln	Pro	Trp	Glu	Asn	
	1090					1095					1100					
Thr	Ser	Lys	Thr	Val	Lys	Tyr	Leu	Asn	Asn	Leu	Tyr	Lys	Ile	Ile	Ser	
1105				1110						1115					1120	
Lys	Pro	Leu	Thr	Trp	His	Gly	Ala	Leu	Lys	Glu	Cys	Met	Lys	Glu	Lys	
			1125						1130					1135		
Met	Arg	Leu	Val	Ser	Ile	Thr	Asp	Pro	Tyr	Gln	Gln	Ala	Phe	Leu	Ala	
		1140					1145						1150			
Val	Gln	Ala	Thr	Leu	Arg	Asn	Ser	Phe	Trp	Ile	Gly	Leu	Ser	Ser		
	1155					1160					1165					
Gln	Asp	Asp	Glu	Leu	Asn	Phe	Gly	Trp	Ser	Asp	Gly	Lys	Arg	Leu	Gln	
	1170					1175					1180					
Phe	Ser	Asn	Trp	Ala	Gly	Ser	Asn	Glu	Gln	Leu	Asp	Asp	Cys	Val	Ile	
1185				1190						1195					1200	
Leu	Asp	Thr	Asp	Gly	Phe	Trp	Lys	Thr	Ala	Asp	Cys	Asp	Asp	Asn	Gln	
			1205						1210					1215		
Pro	Gly	Ala	Ile	Cys	Tyr	Tyr	Pro	Gly	Asn	Glu	Thr	Glu	Glu	Glu	Val	
		1220						1225				1230				
Arg	Ala	Leu	Asp	Thr	Ala	Lys	Cys	Pro	Ser	Pro	Val	Gln	Ser	Thr	Pro	
	1235						1240					1245				
Trp	Ile	Pro	Phe	Gln	Asn	Ser	Cys	Tyr	Asn	Phe	Met	Ile	Thr	Asn	Asn	
	1250					1255					1260					
Arg	His	Lys	Thr	Val	Thr	Pro	Glu	Glu	Val	Gln	Ser	Thr	Cys	Glu	Lys	
1265				1270						1275					1280	
Leu	His	Pro	Lys	Ala	His	Ser	Leu	Ser	Ile	Arg	Asn	Glu	Glu	Glu	Asn	
			1285						1290					1295		
Thr	Phe	Val	Val	Glu	Gln	Leu	Leu	Tyr	Phe	Asn	Tyr	Ile	Ala	Ser	Trp	
		1300						1305					1310			
Val	Met	Leu	Gly	Ile	Thr	Tyr	Glu	Asn	Asn	Ser	Leu	Met	Trp	Phe	Asp	
	1315					1320					1325					
Lys	Thr	Ala	Leu	Ser	Tyr	Thr	His	Trp	Arg	Thr	Gly	Arg	Pro	Thr	Val	
	1330					1335					1340					

Lys Asn Gly Lys Phe Leu Ala Gly Leu Ser Thr Asp Gly Phe Trp Asp
 1345 1350 1355 1360
 Ile Gln Ser Phe Asn Val Ile Glu Glu Thr Leu His Phe Tyr Gln His
 1365 1370 1375
 Ser Ile Ser Ala Cys Lys Ile Glu Met Val Asp Tyr Glu Asp Lys His
 1380 1385 1390
 Asn Gly Thr Leu Pro Gln Phe Ile Pro Tyr Lys Asp Gly Val Tyr Ser
 1395 1400 1405
 Val Ile Gln Lys Lys Val Thr Trp Tyr Glu Ala Leu Asn Ala Cys Ser
 1410 1415 1420
 Gln Ser Gly Gly Glu Leu Ala Ser Val His Asn Pro Asn Gly Lys Leu
 1425 1430 1435 1440
 Phe Leu Glu Asp Ile Val Asn Arg Asp Gly Phe Pro Leu Trp Val Gly
 1445 1450 1455
 Leu Ser Ser His Asp Gly Ser Glu Ser Ser Phe Glu Trp Ser Asp Gly
 1460 1465 1470
 Arg Ala Phe Asp Tyr Val Pro Trp Gln Ser Leu Gln Ser Pro Gly Asp
 1475 1480 1485
 Cys Val Val Leu Tyr Pro Lys Gly Ile Trp Arg Arg Glu Lys Cys Leu
 1490 1495 1500
 Ser Val Lys Asp Gly Ala Ile Cys Tyr Lys Pro Thr Lys Asp Lys Lys
 1505 1510 1515 1520
 Leu Ile Phe His Val Lys Ser Ser Lys Cys Pro Val Ala Lys Arg Asp
 1525 1530 1535
 Gly Pro Gln Trp Val Gln Tyr Gly Gly His Cys Tyr Ala Ser Asp Gln
 1540 1545 1550
 Val Leu His Ser Phe Ser Glu Ala Lys Gln Val Cys Gln Glu Leu Asp
 1555 1560 1565
 His Ser Ala Thr Val Val Thr Ile Ala Asp Glu Asn Glu Asn Lys Phe
 1570 1575 1580
 Val Ser Arg Leu Met Arg Glu Asn Tyr Asn Ile Thr Met Arg Val Trp
 1585 1590 1595 1600
 Leu Gly Leu Ser Gln His Ser Leu Asp Gln Ser Trp Ser Trp Leu Asp
 1605 1610 1615
 Gly Leu Asp Val Thr Phe Val Lys Trp Glu Asn Lys Thr Lys Asp Gly
 1620 1625 1630
 Asp Gly Lys Cys Ser Ile Leu Ile Ala Ser Asn Glu Thr Trp Arg Lys
 1635 1640 1645
 Val His Cys Ser Arg Gly Tyr Ala Arg Ala Val Cys Lys Ile Pro Leu
 1650 1655 1660
 Ser Pro Asp Tyr Thr Gly Ile Ala Ile Leu Phe Ala Val Leu Cys Leu
 1665 1670 1675 1680
 Leu Gly Leu Ile Ser Leu Ala Ile Trp Phe Leu Leu Gln Arg Ser His
 1685 1690 1695
 Ile Arg Trp Thr Gly Phe Ser Ser Val Arg Tyr Glu His Gly Thr Asn
 1700 1705 1710
 Glu Asp Glu Val Met Leu Pro Ser Phe His Asp
 1715 1720

<210> 4

<211> 30

<212> PRT

<213> mus musculus

<400> 4

Arg Ser His Ile Arg Trp Thr Gly Phe Ser Ser Val Arg Tyr Glu His

1	5	10	15
Gly Thr Asn Glu Asp Glu Val Met Leu Pro Ser Phe His Asp			
20	25	30	

<210> 5
 <211> 5477
 <212> DNA
 <213> homo sapiens

<400> 5

gaattccggg	ggcgggagcc	gcgtgcgccc	gaggaccg	ccggaaggct	tgcgccagct	60
caggatgagg	acaggctggg	cgaccctcg	ccgcccggcg	gggctcctca	tgtgctctt	120
ctggttcttc	gatctcgcg	agccctctgg	ccgcgcagct	aatgaccctt	tcaccatcgt	180
ccatggaaat	acgggcaagt	gcatcaagcc	agtgtatggc	tggatagtag	cagacgactg	240
tgatgaaact	gaggacaagt	tatggaagt	gggtgtcccag	catcggctct	ttcatttgca	300
ctcccaaaag	tgccttgccc	tcgatattac	caaatcggt	aatgagctga	gaatgttcag	360
ctgtgactcc	agtgccatgc	tgtggtggaa	atgtgagcac	cactctctgt	acggagctgc	420
ccggtaccgg	ctggctctga	aggatggaca	tggcacagca	atctcaaagt	catctgatgt	480
ctggaagaaa	ggaggctcag	aggaaagcct	ttgtgaccag	ccttatcatg	agatctatac	540
cagagatggg	aactcttatg	ggagaccttg	tgaatttcca	ttcttaattg	atgggacctg	600
gcatcatgat	tgcattcttg	atgaagatca	tagtgggcca	tgggtgtgcca	ccaccttaaa	660
ttatgaatat	gaccgaaagt	ggggcatctg	cttaaagcct	gaaaacgggt	gtgaagataa	720
ttgggaaaag	aacgagcagt	ttggaagttg	ctaccaattt	aatactcaga	cggctctttc	780
ttggaagaa	gcttatgttt	catgtcagaa	tcaaggagct	gatttactga	gcatcaacag	840
tgctgctgaa	ttaacttacc	ttaaagataa	agaaggcatt	gctaagattt	tctggattgg	900
tttaaactcag	ctatactctg	ctagaggctg	ggaatggtca	gaccacaaac	cattaaactt	960
tctcaactgg	gatccagaca	ggcccagtcg	acctactata	ggtggctcca	gctgtgcaag	1020
aatggatgct	gagtcctggtc	tgtggcagag	cttttctctg	gaagctcaac	tgccctatgt	1080
ctgcaggaaa	ccattaaata	atacagtgg	gttaacagat	gtctggacat	actcagatac	1140
ccgctgtgat	gcaggctggc	tgccaaataa	tggattttgc	tatctgctgg	taaatgaaag	1200
taattccttg	gataaggcac	atgcgaaatg	caaagccttc	agtagtgacc	taatcagcat	1260
tcattctcta	gcagatgtgg	agggtggtgt	cacaaaactc	cataatgagg	atacaaaaga	1320
agaagtgtgg	ataggcctta	agaacataaa	cataccaact	ttatttcagt	ggtcagatgg	1380
tactgaagtt	actctaact	attgggatga	gaatgagcca	aatgttccct	acaataagac	1440
gccaactgt	gtttctact	taggagagct	aggctcagtg	aaagtccaat	catgtgagga	1500
gaaactaaaa	tatgtatgca	agagaaaggg	agaaaaactg	aatgacgcaa	gttctgataa	1560
gatgtgtcct	ccagatgagg	gctggaagag	acatggagaa	acctgttaca	agatttatga	1620
ggatgaggtc	ccttttgga	caaactgcaa	tctgactatc	actagcagat	ttgagcaaga	1680
atacctaaat	gatttgatga	aaaagtatga	taaatctcta	agaaaatact	tctggactgg	1740
cctgagagat	gtagattctt	gtggagagta	taactgggca	actgttggtg	gaagaaggcg	1800
ggctgtaacc	ttttccaact	ggaattttct	tgagccagct	tccccggg	gctgcgtggc	1860
tatgtctact	ggaaagtctg	ttggaagtgt	ggaggtgaag	gactgcagaa	gcttcaaagc	1920
actttcaatt	tgcaagaaaa	tgagtggacc	ccttgggcct	gaagaagcat	cccctaagcc	1980
tgatgacccc	tgtcctgaag	gctggcagag	tttccccgca	agtctttctt	gttataaggt	2040
attccatgca	gaaagaattg	taagaaagag	gaactgggaa	gaagctgaac	gattctgcca	2100
agcccttgga	gcacaccttt	ctagcttcag	ccatgtggat	gaaataaagg	aatttcttca	2160
ctttttaacg	gaccagttca	gtggccagca	ttggctgtgg	attggtttga	ataaaaggag	2220
cccagattta	caaggatcct	ggcaatggag	tgatcgtaga	ccagtgtcta	ctattatcat	2280
gccaatagag	tttcagcagg	attatgacat	cagagactgt	gctgctgtca	aggtatttca	2340
taggccatgg	cgaagaggct	ggcatttcta	tgatgataga	gaatttattt	atttgaggcc	2400
ttttgcttgt	gatacaaaac	ttgaatgggt	gtgccaaatt	ccaaaaggcc	gtactccaaa	2460
aacaccagac	tgggtacaatc	cagagcgtgc	tggaaattcat	ggacctccac	ttataattga	2520
aggaagtga	tattgggtttg	ttgctgatct	tcacctaaac	tatgaagaag	ccgtcctgta	2580
ctgtgccagc	aatcacagct	ttcttgcaac	tataacatct	tttgtgggac	taaaagccat	2640
caaaaacaaa	atagcaaata	tatctggtga	tggacagaag	tgggtggataa	gaattagcga	2700
gtggccaata	gatgatcatt	ttacatactc	acgatatcca	tggcaccgct	ttcctgtgac	2760

atttggagag	gaatgcttgt	acatgtctgc	caagacttgg	cttatcgact	taggtaaacc	2820
aacagactgt	agtaccaagt	tgcccttcac	ctgtgaaaaa	tataatgttt	cttcgcttaga	2880
gaaatacagc	ccagattctg	cagctaaagt	gcaatgttct	gagcaatgga	ttccttttca	2940
gaataagtgt	tttctaaaga	tcaaaccctg	gtctctcaca	ttttctcaag	caagcgatac	3000
ctgtcactcc	tatggtggca	cccttccttc	agtgttgagc	cagattgaac	aagactttat	3060
tacatccttg	cttccggata	tggaaagctac	tttatggatt	ggtttgcgct	ggactgccta	3120
tgaaaagata	aacaaatgga	cagataacag	agagctgacg	tacagtaact	ttcaccatt	3180
attgggttagt	gggaggctga	gaataccaga	aaatTTTTTT	gaggaagagt	ctcgctacca	3240
ctgtgcccta	atactcaacc	tccaaaaatc	accgtttact	gggacgtgga	atTTTtacatc	3300
ctgcagtga	cgccactttg	tgtctctctg	tcagaaatat	tcagaagtta	aaagcagaca	3360
gacgttgca	aatgcttcag	aaactgtaaa	gtatctaaat	aatctgtaca	aaataatccc	3420
aaagactctg	acttggcaca	gtgctaaaag	ggagtgtctg	aaaagtaaca	tgcagctggg	3480
gagcatcacg	gacccttacc	agcaggcatt	cctcagtgtg	caggcgctcc	ttcacaactc	3540
ttccttatgg	atcggactct	tcagtcaaga	tgatgaactc	aactttgggt	ggtcagatgg	3600
gaaacgtctt	catttttagtc	gctgggctga	aactaatggg	caactcgaag	actgtgtagt	3660
attagacact	gatggattct	ggaaaacagt	tgattgcaat	gacaatcaac	cagggtgctat	3720
ttgctactat	ccaggaaatg	agactgaaaa	agaggctcaa	ccagttgaca	gtgttaaattg	3780
tccatctcct	gttctaaata	ctccgtggat	accatTTTcag	aactgttgct	acaatTTTcat	3840
aataacaaag	aataggcata	tggcaacaac	acaggatgaa	gttcatacta	aatgccagaa	3900
actgaatcca	aaatcacata	ttctgagtat	tcgagatgaa	aaggagaata	actTTTgttct	3960
tgagcaactg	ctgtacttca	attatatggc	ttcatgggtc	atgttaggaa	taacttatag	4020
aaataattct	cttatgtggg	ttgataagac	cccactgtca	tatacacatt	ggagagcagg	4080
aagaccaact	ataaaaaatg	agagggtttt	ggctgggtta	agtactgacg	gcttctggga	4140
tattcaaacc	tttaaagtta	ttgaagaagc	agtttatTTT	caccagcaca	gcattcttgc	4200
ttgtaaaatt	gaaatgggtg	actacaaaga	agaatataat	actacactgc	cacagtttat	4260
gccatatgaa	gatgggtatt	acagtgttat	tcaaaaaaag	gtaacatggg	atgaagcatt	4320
aaacatgtgt	tctcaaagtg	gaggctcact	ggcaagcggt	cacaacccaa	atggccagct	4380
ctttctggaa	gatattgtaa	aacgtgatgg	atttccacta	tgggttgggc	tctcaagtca	4440
tgatggaagt	gaatcaagtt	ttgaatgggc	tgatggtagt	acatttgact	atatcccatg	4500
gaaaggccaa	acatctcctg	gaaatttgtg	tctcttggat	ccaaaaggaa	cttggaacaa	4560
tgaaaaatgc	aactctgtta	aggatgggtg	tatttgttat	aaacctacaa	aagctaaaaa	4620
gctgtcccgt	cttacatatt	catcaagatg	tccagcagca	aaagagaatg	ggtcacgggtg	4680
gatccagtac	aagggtcact	gttacaagtc	tgacaggcca	ttgcacagtt	tttcagaggc	4740
caaaaaattg	tgttcaaaac	atgatcactc	tgcaactatc	gtttccataa	aagatgaaga	4800
tgagaataaa	tttgtgagca	gactgatgag	ggaaaataat	aacattacca	tgagagtttg	4860
gcttggatta	tctcaacatt	ctgttgacca	gtcttggagt	tgggttagatg	gatcagaagt	4920
gacatttgtc	aaatgggaaa	ataaaagtta	gagtgggtgt	ggaagatgta	gcatgttgat	4980
agcttcaaat	gaaacttggg	aaaaagttga	atgtgaacat	ggtttttgaa	gagttgtctg	5040
caaagtgcct	ctgggccctg	attacacagc	aatagctatc	atagttgcca	cactaagtat	5100
cttagttctc	atgggctggc	tgatttgggt	cctcttccaa	aggcaccgtt	tgcacctggc	5160
gggtttctca	tcagttcgat	atgcacaagg	agtgaatgaa	gatgagatta	tgcttctctc	5220
tttccatgac	taaattcttc	taaaagtttt	ctaatttgca	ctaattgtgt	atgagaaatt	5280
agtcacttaa	aatgtccagt	gtcagtattt	actctgctcc	aaagtagaac	tcttaaatac	5340
tttttcagtt	gttttagatct	aggcatgtgc	tggatatccac	agttaattcc	ctgctaaatg	5400
ccatgtttat	caccctaatt	aatagaatgg	aggggactcc	aaagctggaa	ctgaagtcaa	5460
attgtttgac	agtaata					5477

<210> 6

<211> 1825

<212> PRT

<213> homo sapiens

<220>

<221> VARIANT

<222> 1744, 1751, 1763, 1785, 1787, 1795, 1807, 1808

<223> Xaa = Any Amino Acid

<400> 6

Asn	Ser	Gly	Gly	Gly	Ser	Arg	Val	Arg	Pro	Arg	Thr	Arg	Pro	Glu	Gly
1				5					10					15	
Leu	Arg	Gln	Leu	Arg	Met	Arg	Thr	Gly	Trp	Ala	Thr	Pro	Arg	Arg	Pro
			20					25					30		
Ala	Gly	Leu	Leu	Met	Leu	Leu	Phe	Trp	Phe	Phe	Asp	Leu	Ala	Glu	Pro
		35					40					45			
Ser	Gly	Arg	Ala	Ala	Asn	Asp	Pro	Phe	Thr	Ile	Val	His	Gly	Asn	Thr
	50					55					60				
Gly	Lys	Cys	Ile	Lys	Pro	Val	Tyr	Gly	Trp	Ile	Val	Ala	Asp	Asp	Cys
65					70					75					80
Asp	Glu	Thr	Glu	Asp	Lys	Leu	Trp	Lys	Trp	Val	Ser	Gln	His	Arg	Leu
				85					90					95	
Phe	His	Leu	His	Ser	Gln	Lys	Cys	Leu	Gly	Leu	Asp	Ile	Thr	Lys	Ser
			100					105					110		
Val	Asn	Glu	Leu	Arg	Met	Phe	Ser	Cys	Asp	Ser	Ser	Ala	Met	Leu	Trp
		115					120					125			
Trp	Lys	Cys	Glu	His	His	Ser	Leu	Tyr	Gly	Ala	Ala	Arg	Tyr	Arg	Leu
	130					135					140				
Ala	Leu	Lys	Asp	Gly	His	Gly	Thr	Ala	Ile	Ser	Asn	Ala	Ser	Asp	Val
145					150					155					160
Trp	Lys	Lys	Gly	Gly	Ser	Glu	Glu	Ser	Leu	Cys	Asp	Gln	Pro	Tyr	His
			165					170					175		
Glu	Ile	Tyr	Thr	Arg	Asp	Gly	Asn	Ser	Tyr	Gly	Arg	Pro	Cys	Glu	Phe
			180				185						190		
Pro	Phe	Leu	Ile	Asp	Gly	Thr	Trp	His	His	Asp	Cys	Ile	Leu	Asp	Glu
	195					200					205				
Asp	His	Ser	Gly	Pro	Trp	Cys	Ala	Thr	Thr	Leu	Asn	Tyr	Glu	Tyr	Asp
	210					215					220				
Arg	Lys	Trp	Gly	Ile	Cys	Leu	Lys	Pro	Glu	Asn	Gly	Cys	Glu	Asp	Asn
225					230					235					240
Trp	Glu	Lys	Asn	Glu	Gln	Phe	Gly	Ser	Cys	Tyr	Gln	Phe	Asn	Thr	Gln
			245					250					255		
Thr	Ala	Leu	Ser	Trp	Lys	Glu	Ala	Tyr	Val	Ser	Cys	Gln	Asn	Gln	Gly
		260					265						270		
Ala	Asp	Leu	Leu	Ser	Ile	Asn	Ser	Ala	Ala	Glu	Leu	Thr	Tyr	Leu	Lys
	275					280						285			
Asp	Lys	Glu	Gly	Ile	Ala	Lys	Ile	Phe	Trp	Ile	Gly	Leu	Asn	Gln	Leu
	290					295				300					
Tyr	Ser	Ala	Arg	Gly	Trp	Glu	Trp	Ser	Asp	His	Lys	Pro	Leu	Asn	Phe
305				310					315						320
Leu	Asn	Trp	Asp	Pro	Asp	Arg	Pro	Ser	Ala	Pro	Thr	Ile	Gly	Gly	Ser
			325					330					335		
Ser	Cys	Ala	Arg	Met	Asp	Ala	Glu	Ser	Gly	Leu	Trp	Gln	Ser	Phe	Ser
		340					345					350			
Cys	Glu	Ala	Gln	Leu	Pro	Tyr	Val	Cys	Arg	Lys	Pro	Leu	Asn	Asn	Thr
	355						360					365			
Val	Glu	Leu	Thr	Asp	Val	Trp	Thr	Tyr	Ser	Asp	Thr	Arg	Cys	Asp	Ala
	370				375						380				
Gly	Trp	Leu	Pro	Asn	Asn	Gly	Phe	Cys	Tyr	Leu	Leu	Val	Asn	Glu	Ser
385				390					395						400
Asn	Ser	Trp	Asp	Lys	Ala	His	Ala	Lys	Cys	Lys	Ala	Phe	Ser	Ser	Asp
			405					410					415		
Leu	Ile	Ser	Ile	His	Ser	Leu	Ala	Asp	Val	Glu	Val	Val	Val	Thr	Lys
		420					425					430			
Leu	His	Asn	Glu	Asp	Ile	Lys	Glu	Glu	Val	Trp	Ile	Gly	Leu	Lys	Asn
		435					440					445			

Ile	Asn	Ile	Pro	Thr	Leu	Phe	Gln	Trp	Ser	Asp	Gly	Thr	Glu	Val	Thr
	450					455					460				
Leu	Thr	Tyr	Trp	Asp	Glu	Asn	Glu	Pro	Asn	Val	Pro	Tyr	Asn	Lys	Thr
465					470					475					480
Pro	Asn	Cys	Val	Ser	Tyr	Leu	Gly	Glu	Leu	Gly	Gln	Trp	Lys	Val	Gln
				485					490					495	
Ser	Cys	Glu	Glu	Lys	Leu	Lys	Tyr	Val	Cys	Lys	Arg	Lys	Gly	Glu	Lys
				500				505					510		
Leu	Asn	Asp	Ala	Ser	Ser	Asp	Lys	Met	Cys	Pro	Pro	Asp	Glu	Gly	Trp
		515					520					525			
Lys	Arg	His	Gly	Glu	Thr	Cys	Tyr	Lys	Ile	Tyr	Glu	Asp	Glu	Val	Pro
	530					535					540				
Phe	Gly	Thr	Asn	Cys	Asn	Leu	Thr	Ile	Thr	Ser	Arg	Phe	Glu	Gln	Glu
545					550					555					560
Tyr	Leu	Asn	Asp	Leu	Met	Lys	Lys	Tyr	Asp	Lys	Ser	Leu	Arg	Lys	Tyr
				565					570					575	
Phe	Trp	Thr	Gly	Leu	Arg	Asp	Val	Asp	Ser	Cys	Gly	Glu	Tyr	Asn	Trp
			580					585					590		
Ala	Thr	Val	Gly	Gly	Arg	Arg	Arg	Ala	Val	Thr	Phe	Ser	Asn	Trp	Asn
		595					600					605			
Phe	Leu	Glu	Pro	Ala	Ser	Pro	Gly	Gly	Cys	Val	Ala	Met	Ser	Thr	Gly
	610					615					620				
Lys	Ser	Val	Gly	Lys	Trp	Glu	Val	Lys	Asp	Cys	Arg	Ser	Phe	Lys	Ala
625					630					635					640
Leu	Ser	Ile	Cys	Lys	Lys	Met	Ser	Gly	Pro	Leu	Gly	Pro	Glu	Glu	Ala
				645					650					655	
Ser	Pro	Lys	Pro	Asp	Asp	Pro	Cys	Pro	Glu	Gly	Trp	Gln	Ser	Phe	Pro
			660					665					670		
Ala	Ser	Leu	Ser	Cys	Tyr	Lys	Val	Phe	His	Ala	Glu	Arg	Ile	Val	Arg
		675					680					685			
Lys	Arg	Asn	Trp	Glu	Glu	Ala	Glu	Arg	Phe	Cys	Gln	Ala	Leu	Gly	Ala
	690					695					700				
His	Leu	Ser	Ser	Phe	Ser	His	Val	Asp	Glu	Ile	Lys	Glu	Phe	Leu	His
705					710					715					720
Phe	Leu	Thr	Asp	Gln	Phe	Ser	Gly	Gln	His	Trp	Leu	Trp	Ile	Gly	Leu
				725					730					735	
Asn	Lys	Arg	Ser	Pro	Asp	Leu	Gln	Gly	Ser	Trp	Gln	Trp	Ser	Asp	Arg
			740					745					750		
Thr	Pro	Val	Ser	Thr	Ile	Ile	Met	Pro	Asn	Glu	Phe	Gln	Gln	Asp	Tyr
		755					760					765			
Asp	Ile	Arg	Asp	Cys	Ala	Ala	Val	Lys	Val	Phe	His	Arg	Pro	Trp	Arg
	770					775					780				
Arg	Gly	Trp	His	Phe	Tyr	Asp	Asp	Arg	Glu	Phe	Ile	Tyr	Leu	Arg	Pro
785					790					795					800
Phe	Ala	Cys	As												

			900					905					910			
Pro	Trp	His	Arg	Phe	Pro	Val	Thr	Phe	Gly	Glu	Glu	Cys	Leu	Tyr	Met	
		915					920					925				
Ser	Ala	Lys	Thr	Trp	Leu	Ile	Asp	Leu	Gly	Lys	Pro	Thr	Asp	Cys	Ser	
	930					935					940					
Thr	Lys	Leu	Pro	Phe	Ile	Cys	Glu	Lys	Tyr	Asn	Val	Ser	Ser	Leu	Glu	
945					950					955					960	
Lys	Tyr	Ser	Pro	Asp	Ser	Ala	Ala	Lys	Val	Gln	Cys	Ser	Glu	Gln	Trp	
				965					970						975	
Ile	Pro	Phe	Gln	Asn	Lys	Cys	Phe	Leu	Lys	Ile	Lys	Pro	Val	Ser	Leu	
			980					985					990			
Thr	Phe	Ser	Gln	Ala	Ser	Asp	Thr	Cys	His	Ser	Tyr	Gly	Gly	Thr	Leu	
		995					1000					1005				
Pro	Ser	Val	Leu	Ser	Gln	Ile	Glu	Gln	Asp	Phe	Ile	Thr	Ser	Leu	Leu	
	1010					1015					1020					
Pro	Asp	Met	Glu	Ala	Thr	Leu	Trp	Ile	Gly	Leu	Arg	Trp	Thr	Ala	Tyr	
1025					1030					1035					1040	
Glu	Lys	Ile	Asn	Lys	Trp	Thr	Asp	Asn	Arg	Glu	Leu	Thr	Tyr	Ser	Asn	
				1045					1050					1055		
Phe	His	Pro	Leu	Leu	Val	Ser	Gly	Arg	Leu	Arg	Ile	Pro	Glu	Asn	Phe	
			1060					1065					1070			
Phe	Glu	Glu	Glu	Ser	Arg	Tyr	His	Cys	Ala	Leu	Ile	Leu	Asn	Leu	Gln	
		1075					1080					1085				
Lys	Ser	Pro	Phe	Thr	Gly	Thr	Trp	Asn	Phe	Thr	Ser	Cys	Ser	Glu	Arg	
	1090					1095					1100					
His	Phe	Val	Ser	Leu	Cys	Gln	Lys	Tyr	Ser	Glu	Val	Lys	Ser	Arg	Gln	
1105					1110					1115					1120	
Thr	Leu	Gln	Asn	Ala	Ser	Glu	Thr	Val	Lys	Tyr	Leu	Asn	Asn	Leu	Tyr	
				1125					1130					1135		
Lys	Ile	Ile	Pro	Lys	Thr	Leu	Thr	Trp	His	Ser	Ala	Lys	Arg	Glu	Cys	
			1140					1145					1150			
Leu	Lys	Ser	Asn	Met	Gln	Leu	Val	Ser	Ile	Thr	Asp	Pro	Tyr	Gln	Gln	
		1155					1160					1165				
Ala	Phe	Leu	Ser	Val	Gln	Ala	Leu	Leu	His	Asn	Ser	Ser	Leu	Trp	Ile	
	1170					1175					1180					
Gly	Leu	Phe	Ser	Gln	Asp	Asp	Glu	Leu	Asn	Phe	Gly	Trp	Ser	Asp	Gly	
1185					1190					1195					1200	
Lys	Arg	Leu	His	Phe	Ser	Arg	Trp	Ala	Glu	Thr	Asn	Gly	Gln	Leu	Glu	
				1205					1210					1215		
Asp	Cys	Val	Val	Leu	Asp	Thr	Asp	Gly	Phe	Trp	Lys	Thr	Val	Asp	Cys	
			1220					1225					1230			
Asn	Asp	Asn	Gln	Pro	Gly	Ala	Ile	Cys	Tyr	Tyr	Pro	Gly	Asn	Glu	Thr	
		1235					1240					1245				
Glu	Lys	Glu	Val	Lys	Pro	Val	Asp	Ser	Val	Lys	Cys	Pro	Ser	Pro	Val	

Arg Pro Thr Ile Lys Asn Glu Arg Phe Leu Ala Gly Leu Ser Thr Asp
 1365 1370 1375
 Gly Phe Trp Asp Ile Gln Thr Phe Lys Val Ile Glu Glu Ala Val Tyr
 1380 1385 1390
 Phe His Gln His Ser Ile Leu Ala Cys Lys Ile Glu Met Val Asp Tyr
 1395 1400 1405
 Lys Glu Glu Tyr Asn Thr Thr Leu Pro Gln Phe Met Pro Tyr Glu Asp
 1410 1415 1420
 Gly Ile Tyr Ser Val Ile Gln Lys Lys Val Thr Trp Tyr Glu Ala Leu
 1425 1430 1435 1440
 Asn Met Cys Ser Gln Ser Gly Gly His Leu Ala Ser Val His Asn Gln
 1445 1450 1455
 Asn Gly Gln Leu Phe Leu Glu Asp Ile Val Lys Arg Asp Gly Phe Pro
 1460 1465 1470
 Leu Trp Val Gly Leu Ser Ser His Asp Gly Ser Glu Ser Ser Phe Glu
 1475 1480 1485
 Trp Ser Asp Gly Ser Thr Phe Asp Tyr Ile Pro Trp Lys Gly Gln Thr
 1490 1495 1500
 Ser Pro Gly Asn Cys Val Leu Leu Asp Pro Lys Gly Thr Trp Lys His
 1505 1510 1515 1520
 Glu Lys Cys Asn Ser Val Lys Asp Gly Ala Ile Cys Tyr Lys Pro Thr
 1525 1530 1535
 Lys Ala Lys Lys Leu Ser Arg Leu Thr Tyr Ser Ser Arg Cys Pro Ala
 1540 1545 1550
 Ala Lys Glu Asn Gly Ser Arg Trp Ile Gln Tyr Lys Gly His Cys Tyr
 1555 1560 1565
 Lys Ser Asp Gln Ala Leu His Ser Phe Ser Glu Ala Lys Lys Leu Cys
 1570 1575 1580
 Ser Lys His Asp His Ser Ala Thr Ile Val Ser Ile Lys Asp Glu Asp
 1585 1590 1595 1600
 Glu Asn Lys Phe Val Ser Arg Leu Met Arg Glu Asn Asn Asn Ile Thr
 1605 1610 1615
 Met Arg Val Trp Leu Gly Leu Ser Gln His Ser Val Asp Gln Ser Trp
 1620 1625 1630
 Ser Trp Leu Asp Gly Ser Glu Val Thr Phe Val Lys Trp Glu Asn Lys
 1635 1640 1645
 Ser Lys Ser Gly Val Gly Arg Cys Ser Met Leu Ile Ala Ser Asn Glu
 1650 1655 1660
 Thr Trp Lys Lys Val Glu Cys Glu His Gly Phe Gly Arg Val Val Cys
 1665 1670 1675 1680
 Lys Val Pro Leu Gly Pro Asp Tyr Thr Ala Ile Ala Ile Ile Val Ala
 1685 1690 1695
 Thr Leu Ser Ile Leu Val Leu Met Gly Gly Leu Ile Trp Phe Leu Phe
 1700 1705 1710
 Gln Arg His Arg Leu His Leu Ala Gly Phe Ser Ser Val Arg Tyr Ala
 1715 1720 1725
 Gln Gly Val Asn Glu Asp Glu Ile Met Leu Pro Ser Phe His Asp Xaa
 1730 1735 1740
 Ile Leu Leu Lys Val Phe Xaa Phe Ala Leu Met Cys Tyr Glu Lys Leu
 1745 1750 1755 1760
 Val Thr Xaa Asn Val Gln Cys Gln Tyr Leu Leu Cys Ser Lys Val Glu
 1765 1770 1775
 Leu Leu Asn Thr Phe Ser Val Val Xaa Ile Xaa Ala Cys Ala Gly Ile
 1780 1785 1790
 His Ser Xaa Phe Pro Ala Lys Cys His Val Tyr His Pro Asn Xaa Xaa
 1795 1800 1805
 Asn Gly Gly Asp Ser Lys Ala Gly Thr Glu Val Lys Leu Phe Asp Ser

1810	1815	1820	
Asn			
1825			
<210> 7			
<211> 49			
<212> DNA			
<213> Artificial Sequence			
<220>			
<223> synthetic			
<400> 7			
atagtttagc ggccgcgata tctcactaac actcattcct gttgaagct			49
<210> 8			
<211> 57			
<212> DNA			
<213> Artificial Sequence			
<220>			
<223> synthetic			
<400> 8			
atagtttagc ggccgctcac tagctagctt taccaggaga gtgggagaga ctcttct			57
<210> 9			
<211> 68			
<212> DNA			
<213> Artificial Sequence			
<220>			
<223> synthetic			
<400> 9			
ctagcgacat ggccaagaag gagacagtct ggaggctcga ggagttcggg aggttcacaa			60
acaggaac			68
<210> 10			
<211> 71			
<212> DNA			
<213> Artificial Sequence			
<220>			
<223> synthetic			
<400> 10			
acagacggta gcacagacta tggtattctc cagattaaca gcaggtatta tgacggtagg			60
acatgatagg c			71
<210> 11			
<211> 70			
<212> DNA			
<213> Artificial Sequence			
<220>			

<223> synthetic

<400> 11

gctgtaccgg ttcttctct gtcagacctc cgagctctc aagccatcca agtggttgtc 60
cttgtgtctg 70

<210> 12

<211> 69

<212> DNA

<213> Artificial Sequence

<220>

<223> synthetic

<400> 12

ccatcgtgtc tgataccata agaggtctaa ttgtcgtcca taatactgcc atcctgtact 60
atccgccgg 69

<210> 13

<211> 330

<212> DNA

<213> homo sapiens

<400> 13

caggctgttg tgactcagga atcagcactc accacatcac ctggtgaaac agtcacactc 60
acttgtcgt caagtactgg ggctgttaca attagtaact atgccaactg ggtccaagaa 120
aaaccagatc atttattcac tggctctaata ggtggtacca acaaccgagc tccaggtgtt 180
cctgccagat tctcaggctc cctgattgga gacaaggctg cctcaccat cacaggggca 240
cagactgagg atgaggcaat ctatttctgt gctctatggt acaacaacca gtttattttc 300
ggcagtggaa ccaaggtcac tgtcctaggt 330

<210> 14

<211> 354

<212> DNA

<213> homo sapiens

<400> 14

gaggtccagc tgcaacagtc tggacctgtg ctggtgaagc ctggggcttc agtgaagatg 60
tcttgtaagg cttctggaaa cacattcact gactccttta tgcactggat gaaacagagc 120
catggaaaga gtcttgagt gattggaatt attaatcctt ataacggcgg tactagctac 180
aaccagaaat tcaagggcaa ggccacattg actgttgaca agtcctccag cacagcctac 240
atggagctca acagcctgac atctgaggac tctgcagtct attactgtgc aagaaacggg 300
gtgcggtact actttgacta ctggggccaa ggcaccactc tcacagtctc ctca 354

<210> 15

<211> 8

<212> PRT

<213> mus musculus

<400> 15

Ser Ile Ile Asn Phe Glu Lys Leu

1

5

<210> 16

<211> 17

<212> PRT

<213> mus musculus

<400> 16

Leu Ser Gln Ala Val His Ala Ala His Ala Glu Ile Asn Glu Ala Gly

1 5 10 15

Arg

<210> 17

<211> 8858

<212> DNA

<213> homo sapiens

<400> 17

```
gacggatcgg gagatctgct agcccgggtg acctgaggcg cgccggcttc gaatagccag 60
agtaaccttt ttttttaatt ttattttatt ttatttttga gatggagttt ggcgccgatc 120
tcccgatccc ctatggtcga ctctcagtac aatctgctct gatgccgat agttaagcca 180
gtatctgctc cctgcttggtg tgttgagggt cgctgagtag tgcgcgagca aaatttaagc 240
tacaacaagg caaggcttga ccgacaattg catgaagaat ctgcttaggg ttaggcgttt 300
tgcgctgctt cgcgatgtac gggccagata tacgcgttga cattgattat tgactagtta 360
ttaatagtaa tcaattacgg ggtcattagt tcatagccca tatatggagt tccgcgttac 420
ataacttacg gtaaattggc cgcttggtg accgccaac gacccccgcc cattgacgtc 480
aataatgacg tatgttccca tagtaacgcc aatagggact ttccattgac gtcaatgggt 540
ggactattta cggtaaactg cccacttggc agtacatcaa gtgtatcata tgccaagtac 600
gccccctatt gacgtcaatg acggtaaatt gcccgcctgg cattatgccc agtacatgac 660
cttatgggac tttcctactt ggcagtacat ctacgtatta gtcacgcta ttaccatggg 720
gatgcgggtt tggcagtaca tcaatgggcg tggatagcgg tttgactcac ggggatttcc 780
aagtctccac cccattgacg tcaatgggag tttgttttgg caccaaaatc aacgggactt 840
tccaaaatgt cgtaacaact ccgccccatt gacgcaaatt ggcggtaggc gtgtacgggtg 900
ggaggtctat ataagcagag ctctctggct aactagagaa cccactgctt actggcttat 960
cgaaattaat acgactcact atagggagac ccaagcttgg taccatggaa gccccagctc 1020
agcttctctt cctcctgcta ctctggctcc cagataccac cggagacatt gttctgactc 1080
agtctccagc caccctgtct gtgactccag gagatagagt ctctctttcc tgcaggggcca 1140
gccagagtat tagcgactac ttacactggg atcaacaaaa atcacatgag tctccaaggc 1200
ttctcatcaa atatgcttcc cattccatct ctgggatccc ctccagggtc agtggcagtg 1260
gatcagggtc agatttcact ctacgtatca acagtgtgga acctgaagat gttggaattt 1320
attactgtca acatggtcac agctttccgt ggacgttcgg tggaggcacc aagctggaaa 1380
tcaaacgtaa gtctcgagtc tctagataac cgggtcaatcg gtcaatcgat tgggaattcta 1440
aactctgagg gggtcggatg acgtggccat tctttgccta aagcattgag tttactgcaa 1500
ggtcagaaaa gcatgcaaag cctcagaat ggctgcaaag agctccaaca aaacaattta 1560
gaactttatt aaggaatagg gggaagctag gaagaaactc aaaacatcaa gatttttaat 1620
acgcttcttg gtctccttgc tataattatc tgggataagc atgctgtttt ctgtctgtcc 1680
ctaacatgcc cttatccgca aacaacacac ccaagggcag aactttgtta cttaaacacc 1740
atcctgtttg cttctttcct caggaactgt ggctgcacca tctgtcttca tcttcccgcc 1800
atctgatgag cagttgaaat ctggaactgc ctctgttgtg tgccctgctga ataacttcta 1860
tcccagagag gccaaagtac agtggaagggt ggataacgcc ctccaatcgg gtaactccca 1920
ggagagtgtc acagagcagg acagcaagga cagcacctac agcctcagca gcaccctgac 1980
gctgagcaaa gcagactacg agaaacacaa agtctacgcc tgcgaagtca cccatcaggg 2040
cctgagctcg ccgctcacia agagcttcaa caggggagag tgttagaggg agaagtgcc 2100
ccacctgtc ctacgttcca gcctgacccc ctcccactct ttggcctctg accctttttc 2160
cacaggggac ctacccctat tgcggtctct cagctcatct ttcacctcac cccctcctc 2220
ctccttggct ttaattatgc taatgttggg ggagaatgaa taaataaagt gaatctttgc 2280
acctgtgggt tctctctttc ctcatttaat aattattatc tgttgtttta ccaactactc 2340
aatttctctt ataagggact aaatatgtag tcatcctaag gcacgtaacc atttataaaa 2400
atcactcttc attctatatt accctatcat cctctgcaag acagtcctcc ctcaaacca 2460
caagccttct gtcctcacag tcccctgggc catggtagga gagacttgct tccttgtttt 2520
```

cccctcctca	gcaagccctc	atagtccttt	ttaaggggtga	caggtcttac	agtcatatat	2580
ccttttgattc	aattccctga	gaatcaacca	aagcaaattt	ttcaaaagaa	gaaacctgct	2640
ataaagagaa	tcattcattg	caacatgata	taaaataaca	acacaataaa	agcaattaaa	2700
taaacaaaca	atagggaaat	gtttaagtct	atcatgggtac	ttagacttaa	tggaatgtca	2760
tgcccttattt	acatttttaa	acaggtactg	agggactcct	gtctgccaa	ggccgtattg	2820
agtactttcc	acaacctaat	ttaatccaca	ctatactgtg	agattaaaaa	cattcattaa	2880
aatggttgcaa	aggttctata	aagctgagag	acaaatatat	tctataactc	agcaatccca	2940
cttctagatg	actgagtgtc	cccaccacc	aaaaactat	gcaagaatgt	tcaaagcagc	3000
tttattttaca	aaagccaaaa	attggaaata	gcccgattgt	ccaacaatag	aatgagttat	3060
taaactgtgg	tatgtttata	cattagaata	cccaatgagg	agaattaaca	agctacaact	3120
atacctactc	acacagatga	atctcataaa	aataatgtta	cataagagaa	actcaatgca	3180
aaagatatgt	tctgtatgtt	ttcatccata	taaagttcaa	aaccaggtaa	aaataaaagt	3240
agaaatttgg	atggaaatta	ctcttagctg	ggggtggg	agttagtgcc	tgggagaaga	3300
caagaagggg	cttctggggg	cttggtaatg	ttctgttcc	cgtgtgggg	tgtgcagtta	3360
tgatctgtgc	actgttctgt	atacacatta	tgcttcaaaa	taacttcaca	taaagaacat	3420
cttatacc	gttaatagat	agaagaggaa	taagtaatag	gtcaagacca	acgcagctgg	3480
taagtggggg	cctgggatca	aatagctacc	tgccaatcc	tgccwcttg	agccctgaat	3540
gagtctgcct	tccagggtc	aaggtgctca	acaaaacaac	aggcctgcta	ttttcctggc	3600
atctgtgccc	tgtttgcta	gctaggagca	cacatacata	gaaattaaat	gaaacagacc	3660
ttcagcaagg	ggacagagga	cagaattaac	cttgcccaga	cactggaac	ccatgtatga	3720
acactcacat	gtttgggaag	ggggaagggc	acatgtaa	gaggactctt	cctcattcta	3780
tggggcactc	tgccctgcc	cctctcagct	actcatccat	ccaacacacc	tttctaagta	3840
cctctctctg	cctacactct	gaaggggttc	aggagtaact	aacacagcat	cccttcctc	3900
aaatgactga	caatcccttt	gtcctgcttt	gtttttcttt	ccagtcagta	ctgggaaagt	3960
ggggaaggac	agtcatggag	aaactacata	aggaagcacc	ttgcccttct	gcctcttgag	4020
aatggtgatg	agtatcaaat	ctttcaaact	ttggagggtt	gagtaggggt	gagactcagt	4080
aatgtccctt	ccaatgacat	gaacttgctc	actcatccct	gggggccaaa	ttgaacaatc	4140
aaaggcaggc	ataatccagt	tatgaattct	tgcgccgct	tgctagcttc	acgtgttga	4200
tccaaccg	gaagggccct	attctatagt	gtcacctaaa	tgctagagct	cgctgatcag	4260
cctcgactgt	gccttctagt	tgccagccat	ctgttgtttg	cccccccc	gtgccttct	4320
tgaccctgga	agggtccact	cccactgtcc	tttcttaata	aaatgaggaa	attgcatcgc	4380
attgtctgag	taggtgtcat	tctattctgg	ggggtgggg	ggggcaggac	agcaagggg	4440
aggattggga	agacaatagc	aggcatgctg	ggggtcggt	gggctctatg	gcttctgagg	4500
cggaaagaac	cagctggggg	tctaggggg	atccccagc	gccctgtagc	ggcgcattaa	4560
gcgcggcg	tgtggtggtt	acgcgcagcg	tgaccgctac	acttgccagc	gccctagcgc	4620
ccgctccctt	cgctttcttc	ccttcctttc	tcgccacgtt	cgccgggcct	ctcaaaaaag	4680
ggaaaaaaag	catgcatctc	aattagtcag	caaccatagt	cccgccctta	actccgccca	4740
tcccgccctt	aactccgccc	agttccgccc	attctccgcc	ccatggctga	ctaatttttt	4800
ttatttatgc	agaggccgag	gccgcctcgg	cctctgagct	attccagaag	tagtgaggag	4860
gcttttttgg	aggcctaggc	ttttgcaaaa	agcttgga	gctcagggct	gcgatttcgc	4920
gccaaacttg	acggcaatcc	tagcgtgaag	gctggttaga	ttttatcccc	gctgccatca	4980
tggttcgacc	attgaactgc	atcgtcgccg	tgtcccaaaa	tatggggatt	ggcaagaacg	5040
gagacctacc	ctggcctccg	ctcaggaacg	agttcaagta	cttccaaaga	atgaccacaa	5100
cctcttcagt	ggaaggtaaa	cagaatctgg	tgattatggg	taggaaaacc	tggttctcca	5160
ttcctgagaa	gaatcgacct	ttaaaggaca	gaattaatat	agttctcagt	agagaactca	5220
aagaaccacc	acgaggagct	cattttcttg	ccaaaagttt	ggatgatgcc	ttaagactta	5280
ttgaacaacc	ggaattggca	agtaaagtag	acatggtttg	gatagtcgga	ggcagttctg	5340
tttaccagga	agccatgaat	caaccaggcc	accttagact	ctttgtgaca	aggatcatgc	5400
aggaatttga	aagtgacacg	tttttcccag	aaattgattt	ggggaaatat	aaacttctcc	5460
cagaataccc	aggcgtcctc	tctgaggtcc	aggaggaaaa	aggcatcaag	tataagtttg	5520
aagtctacga	gaagaaagac	taacaggaag	atgctttcaa	gttctctgct	cccctcctaa	5580
agctatgc	ttttataaga	ccatgggact	tttctggt	ttagatctct	ttgtgaagga	5640
accttacttc	tgtggtgtga	cataattgga	caaactacct	acagagattt	aaagctctaa	5700
ggtaaatata	aaatttttaa	gtgtataatg	tgttaaacta	ctgattctaa	ttgtttgtgt	5760
attttagatt	ccaacctatg	gaactgatga	atgggagcag	tggtggaatg	cctttaatga	5820
ggaaaacctg	ttttgctcag	aagaaatgcc	atctagtgat	gatgaggcta	ctgctgactc	5880
tcaacattct	actcctccaa	aaaagaagag	aaaggtagaa	gacccaagg	actttccttc	5940

agaattgcta	agttttttga	gtcatgctgt	gttttagtaat	agaactcttg	cttgctttgc	6000
tattttacacc	acaaaggaaa	aagctgcact	gctatacaag	aaaattatgg	aaaaatatcc	6060
tgtaacctttt	ataagtaggc	ataacagtta	taatcataac	atactgtttt	ttcttactcc	6120
acacaggcat	agagtgtctg	ctattaataa	ctatgctcaa	aaattgtgta	ccttttagctt	6180
tttaattttgt	aaaggggtta	ataaggaata	tttgatgtat	agtgccttga	ctagagatca	6240
taatcagcca	taccacattt	gtagagggtt	tacttgcttt	aaaaaacctc	ccacacctcc	6300
ccctgaacct	gaaacataaa	atgaatgcaa	ttgttggttg	taacttggtt	attgcagctt	6360
ataatgggtta	caaataaagc	aatagcatca	caaatttcac	aaataaagca	tttttttcac	6420
tgcattctag	ttgtgggttg	tccaaactca	tcaatgtatc	ttatcatgtc	tggatcggt	6480
ggatgatcct	ccagcgcggg	gatctcatgc	tggagttctt	cgcccccccc	aacttgttta	6540
ttgcagctta	taatggttac	aaataaagca	atagcatcac	aaatttcaca	aataaagcat	6600
ttttttcact	gcattctagt	tgtgggtttg	ccaaactcat	caatgtatct	tatcatgtct	6660
gtataccgct	gacctctagc	tagagcttgg	cgtaatcatg	gtcatagctg	tttctgtgt	6720
gaaattgtta	tccgctcaca	attccacaca	acatacagac	cggaagcata	aagtgtaaag	6780
cctgggggtgc	ctaattgagt	agctaactca	cattaattgc	gttgcgctca	ctgcccgtt	6840
tccagtcggg	aaacctgtcg	tgccagctgc	attaatgaat	cggccaacgc	gcggggagag	6900
gcggtttgcg	tattgggcgc	tcttcgcgtt	cctcgtcac	tgactcgtcg	cgctcggtcg	6960
ttcggctgcg	gcgagcggta	tcagctcact	caaaggcgg	aatacgggtta	tccacagaat	7020
caggggataa	cgcaggaaa	aacatgtgag	caaaaggcca	gcaaaaggcc	aggaaccgta	7080
aaaaggccgc	gttgctggcg	tttttccata	ggctccgccc	ccctgacgag	catcacaaaa	7140
atcgacgctc	aagtcagagg	tggcgaaacc	cgacaggact	ataaagatac	caggcgtttc	7200
cccctggaag	ctccctcgctg	cgctctcctg	ttccgaccct	gccgcttacc	ggataacctgt	7260
ccgcctttct	cccttcggga	agcgtggcgc	tttctcaatg	ctcacgctgt	aggtatctca	7320
gttcggtgta	ggtcgttcgc	tccaagctgg	gctgtgtgca	cgaaccccc	gttcagccc	7380
accgctgcgc	cttatccggt	aactatcgct	ttgagtccaa	cccggtaaga	cacgacttat	7440
cgccactggc	agcagccact	ggtaacagga	ttagcagagc	gaggtatgta	ggcgggtgcta	7500
cagagttctt	gaagtgggtg	cctaactacg	gctacactag	aaggacagta	tttgggtatct	7560
gcgctctgct	gaagccagtt	accttcggaa	aaagagttgg	tagctcttga	tccggcaaac	7620
aaaccaccgc	tggtagcgg	ggtttttttg	tttgcaagca	gcagattacg	cgcagaaaaa	7680
aaggatctca	agaagatcct	ttgatctttt	ctacggggtc	tgacgctcag	tggaaacgaaa	7740
actcacgtta	agggattttg	gtcatgagat	tatcaaaaag	gatcttcacc	tagatccttt	7800
taaaattaaaa	atgaagtttt	aaatcaatct	aaagtatata	tgagtaaact	tggtctgaca	7860
gtttaccaatg	cttaactagt	gaggcaccta	tctcagcgat	ctgtctattt	cgttcatcca	7920
tagttgcctg	actccccgtc	gtgtagataa	ctacgatacg	ggagggttta	ccatctggcc	7980
ccagtgcctg	aatgataccg	cgagacccac	gctcaccggc	tccagattta	tcagcaataa	8040
accagccagc	cgggaagggcc	gagcgcagaa	gtggctctgc	aactttatcc	gcctccatcc	8100
agtctattaa	ttgttgccgg	gaagctagag	taagtagttc	gccagttaat	agtttgcgca	8160
acgttgttgc	cattgctaca	ggcatcgtag	tgtcacgctc	gtcgtttggt	atggcttcat	8220
tcagctccgg	ttcccaacga	tcaaggcgag	ttacatgatc	ccccatgttg	tgcaaaaaag	8280
cggtagctc	cttcggctct	ccgatcgtag	tcagaagtaa	gttgcccgca	gtgttatcac	8340
tcattggtat	ggcagcactg	cataattctc	ttactgtcat	gccatccgta	agatgctttt	8400
ctgtgactgg	tgagtactca	accaagtcac	tctgagaata	gtgtatgcgg	cgaccgagtt	8460
gctcttgccc	ggcgtcaata	cgggataata	ccgcgccaca	tagcagaact	ttaaaagtgc	8520
tcattcattgg	aaaacgttct	tcggggcgaa	aactctcaag	gatcttaccg	ctgttgagat	8580
ccagttcgat	gtaaccact	cgtgcaccca	actgatcttc	agcatctttt	actttcacca	8640
gcgtttctgg	gtgagcaaaa	acaggaaggc	aaaatgccgc	aaaaaaggga	ataagggcga	8700
cacggaaatg	ttgaatactc	atactcttcc	tttttcaata	ttattgaagc	atttatcagg	8760
gttattgtct	catgagcgga	tacatatttg	aatgtattta	gaaaaataaa	caaatagggg	8820
ttccgcgcac	atttccccga	aaagtgccac	ctgacgctc			8858

<210> 18

<211> 744

<212> DNA

<213> homo sapiens

<400> 18

gaggtgcagc tgttgaggct tgggggaggc ttggtacagc ctgggggggtc cctgagactc 60

tctctgtgcag	cctctggatt	caccttcagt	gactactaca	tgagctgggt	ccgccaggct	120
ccaggggaagg	ggctggagtg	ggtctcagca	attagtggta	gtggtgggag	cacatactac	180
gcagactccc	tgaagggccg	gttcaccatc	tccagagaca	attccaagaa	cacgctgtat	240
ctgcaaata	acagcctgag	agccgaggac	acggccgtgt	attactgtgc	gagagcccct	300
gttgactaca	gtaaccctc	cggtatggac	gtctggggcc	aaggtagact	ggtcaccgtg	360
agcagcgggtg	gaggcgggttc	agggcgagggt	ggatccggcg	gtggcggatc	gcagtctgtg	420
ctgactcagc	caccctcagc	gtctggggacc	cccgggcaga	gggtcaccat	ctcttgttct	480
ggaagcagct	ccaacatcgg	aagtaatact	gttaactggg	atcagcagct	cccaggaacg	540
gccccaaaac	tcctcatcta	tagggataat	cagcgaccct	caggggtccc	tgaccgattc	600
tctggctcca	agtctggcac	ctcagcctcc	ctggccatca	gtgggtcccg	gtccgaggat	660
gaggctgatt	attactgtgc	agcatgggat	gacagcctga	atggttggtg	gttcggcgga	720
ggaaccaagc	tgacggtcct	aggt				744

<210> 19

<211> 630

<212> DNA

<213> homo sapiens

<400> 19

ggtctatata	agcagagctg	ggtacgtcct	cacattcagt	gatcagcact	gaacacagac	60
ccgtcgacgg	tgatcaggac	tgaacagaga	gaactcacca	tggagtttgg	gctgagctgg	120
ctttttcttg	tggctatatt	aaaagggtgc	cagtgtgagg	tgcagctgtt	ggagtctggg	180
ggaggcttgg	tacagcctgg	ggggtccttg	agactctcct	gtgcagcctc	tggattcacc	240
tttagcagct	atgccatgag	ctgggtccgc	caggctccag	ggaaggggct	ggagtgggtc	300
tcagctatta	gtggtagtgg	tggtagcaca	tactacgcag	actccgtgaa	gggccgggtc	360
accatctcca	gagacaattc	caagaacacg	ctgtatctgc	aatgaacag	cctgagagcc	420
gaggacacgg	ccgtatatta	ctgtgcgaaa	gatggggggg	actatgggtc	ggggagttat	480
gggtactttg	actactgggg	ccaggggaacc	ctgggtcaccg	tctcctcagc	tagcaccaag	540
ggcccatcgg	tcttccccct	ggcaccctcc	tccaagagca	cctctggggg	cacagcggcc	600
ctgggctgcc	tgggtcaagga	ctacttcccc				630

<210> 20

<211> 8953

<212> DNA

<213> human immunodeficiency virus

<220>

<221> misc_feature

<222> 7216

<223> n = A,T,C or G

<400> 20

ttctctcgac	gcaggactcg	gcttgctgaa	gtgcacacgg	caagaggcga	agggcggcga	60
ctgggtgagta	cgccaaaaat	atTTTTTgac	tagcggaggc	tagaaggaga	gagatgggtg	120
cgagagcgtc	aatattaagt	gggggaaaat	tagacgattg	ggaaaaaatt	cggttgaggc	180
cagggggaaa	gaaacaatat	aggataaaac	atctagtatg	ggcaagcagg	gagctggaca	240
gatttgcact	taaccctggc	cttctagagt	cagcaaaagg	ctgtcaacaa	atactagtac	300
agctccaacc	agctcttcag	acaggaacag	aagaaattaa	atcattatat	aatacagtag	360
caaccctcta	ttgcgtacat	cagaggatag	agataaaaga	caccaaggaa	gcttttagaca	420
agatagagga	aattcaaaac	aaaaacaaac	agcagacaca	gaaagcagaa	actgacaaaa	480
aagacaacag	tcagggtcagt	caaaattatc	ctatagtgca	gaatctgcaa	gggcaaccgg	540
tacaccaggc	cttatcacct	agaactttaa	atgcatgggt	aaaagtgata	gaagagaaag	600
ccttcagccc	agaagtgata	cccatgtttt	cagcattatc	agaaggagcc	accccgcaag	660
atTTaaacac	catgctaaac	acaatagggg	gacaccaagc	agctatgcaa	atgttaaaaag	720
atactatcaa	tgaggaagct	gcagaatggg	acagggtaca	tccagtacat	gcagggcctg	780
ttgcaccagg	ccagggtgaga	gaaccaaggg	gaagtgatat	agcaggaact	actagtaacc	840
tccaggaaca	aataggatgg	atgacaggca	accacccgat	cccagtagga	gaaatttata	900

aaaggtggat	aattctggga	ctaaataaaa	tagtgagaat	gtatagccct	gtcagcattt	960
tggatataag	acaaggacca	aaagaacctt	tcagagacta	tgtagacaga	ttcttttaaag	1020
ctctaagagc	tgagcaagct	acacaggatg	taaaaaattg	gatgacagat	accttggttg	1080
tccaaaatgc	aaatccagat	tgcaagacca	ttttaaaagc	attaggatca	ggagctacac	1140
tagaagaaat	gatgacagca	tgtcagggag	tgggaggacc	tggtcataaa	gcaagagttt	1200
tggctgaagc	aatgagccaa	gtgaccaata	caaacataat	gatgcaaaga	ggtaacttta	1260
gggatcataa	aagaattggt	aagtgtttca	attgtggcaa	acaaggacac	atagcaaaaa	1320
actgcagggc	ccctagaaaa	aagggtgtgt	ggaaatgtgg	aaaggaagga	caccaaataga	1380
aagactgcac	tgagagacag	gctaattttt	tagggaagat	ttggccttcc	agcaaaggga	1440
ggccagggaa	ttttctccag	agcagaccag	agccaacagc	cccaccagca	gagagcctcg	1500
ggttcggaga	ggagatcccc	tcccgaaac	aggagccgaa	ggacaaggaa	ctgtatcctc	1560
taacttcctt	cagatcactc	tttggcagcg	accccttgtc	acaataagaa	taggggggga	1620
gctaagggaa	gctctattag	atacaggagc	agacgataca	gtattagaag	aaatagattt	1680
gccaggaaaa	tggaaaccaa	aaatgatagg	gggaattgga	ggttttatca	aagtgaagaca	1740
gtataatgag	gtacccatag	aaattgaggg	aaaaaaggct	ataggtacag	tattaatagg	1800
acctacacct	gtcaacataa	ttggaagaaa	catgttgact	cagcttggtt	gtactttaaa	1860
ttttccaatt	agtcctattg	aaactgtacc	agtaaaatta	aagccaggaa	tggatggccc	1920
aaaaattaaa	caatggccat	tgacagaaga	aaaaataaaa	gcattaacac	aaatttgtgc	1980
agaactggaa	gaggagggaa	aaatttcaag	aattgggcct	gaaaatccat	ataacacccc	2040
agtatttgcc	ataaagaaaa	aagacagtac	taaatggaga	aaattagtag	attttagaga	2100
actcaataaa	agaactcaag	acttctggga	agttcagtta	ggaataccac	atccagcagg	2160
gttaaaaaag	aaaaaatcag	tcacagtact	ggatgtgggg	gatgcatatt	tttcagtccc	2220
tttatatgaa	gatttcagga	agtatactgc	attcactata	cctagtataa	acaatgagac	2280
accagggatc	agatatcagt	acaacgtgct	accacaggga	tggaaaggat	caccagcaat	2340
atttcagtgt	agcatgacaa	aaatcttaaa	accttttaga	gaaagaaacc	cagaaatagt	2400
tatctaccag	tacatggatg	acttgatgtg	gggatctgac	ttggaatatg	aacagcatag	2460
aagaaaaata	aaggagctga	gggaacatct	attgaagtgg	ggattttaca	caccagataa	2520
aaaacatcag	aaagaacctc	catttctttg	gatgggatat	gagctccatc	ctgacaaatg	2580
gacagtacaa	cctatacagc	tgccagaaaa	agaagattgg	actgtcaatg	atatacaaaa	2640
gttagtgggg	aaactaaatt	gggcaagtca	aatttatcca	ggaattaaaa	taaaggaact	2700
atgtaaactc	attagggggg	ctaaagcact	aacagacata	gtaccattga	ctagagaagc	2760
agaattggaa	gtggcagaaa	acaaggagat	tctaaaagaa	ccagtacatg	gggtatatta	2820
tgaccgcaga	aggaatttaa	tagcagaagt	gcagaaaaca	ggactggacc	aatggacata	2880
tcaaatttat	caggagccat	ttaaaaacct	gaaaacaggg	aaatatgcaa	aaaggaggag	2940
tgcccacact	aatgatgtaa	agcaattatc	acaagtgggtg	caaaaaatag	ccttggaagc	3000
catagtgata	tggggaaaaa	ctcctaaatt	tagactacc	atacaaaagg	aaacatggga	3060
gacatggtgg	acagactatt	ggcaggccac	ctggattcct	gagtgggagt	ttgtcaatac	3120
ccccctctc	gtaaaattat	ggtaccaatt	agaaaaggaa	cccataatgg	gagcagaaac	3180
tttctatgta	gatggggcat	ctaacaggga	aactaaagta	ggaaaggcag	ggtatgttac	3240
tgacaaagga	agacagaaag	taattaccct	aactgacaca	acaaatcaga	agactgaact	3300
acaagccatt	tatttagctt	tacaggattc	agggatagaa	gtaaacatag	taacagattc	3360
acaatatgca	ttggggatta	ttcaagcaca	accagataag	agtgaatcag	aattagtcaa	3420
tcaaataata	gaggagttaa	taaagaagga	aaaggtctac	ctgtcgtggg	taccagcaca	3480
caaaggaatt	ggaggaaatg	aacaagtaga	taaattagtc	agttctggaa	tcaggaaagt	3540
gctgtttcta	gatgggatag	ataaagctca	agaagaacat	gaaaaatatc	atagcaattg	3600
gagagcaatg	gctagtgatt	ttaatctacc	acctgtagta	gcaaaagaaa	tagtagctag	3660
ctgtgataaa	tgtcagctaa	agggggaagc	catgcatgga	caagtagact	gtagtccagg	3720
gatatggcaa	ttagattgta	cacatttaga	aggaaaagtt	atcctggtag	cagttcatgt	3780
agccagtggc	tatatagaag	cagaagttat	cccagcagaa	acaggacagg	aagcagcatt	3840
ttttattatta	aaattagctg	gcggatggcc	agtaaaagca	atacatacag	ataatggcag	3900
caacttcacc	agtgggtgctg	tgaaggcagc	ctgttggtgg	gcagatatca	aacaggaatt	3960
tgggaattccc	tacaatcccc	aaagtcaagg	agtagtagaa	tctatgaata	aagaattaaa	4020
gaaaatcata	ggacaggtaa	gagaacaagc	tgaacacctt	aagacagcag	tacagatggc	4080
agtattcata	cacaatttta	aaagaaaagg	ggggattggg	ggatacagtg	caggggaaag	4140
aataatagac	ataatagcaa	cagacataca	aactaaagaa	ttacaaaaac	aaatcacaaa	4200
aattcaaaat	tttcgggttt	attacaggga	cagcagagac	ccaatttgga	aaggaccagc	4260
aaaactgctc	tggaaagggtg	aaggggcagt	agtaatacaa	gacaatagtg	aaataaaggt	4320

agtaccaaga	agaaaagcaa	agatcattag	agattatgga	aaacagatgg	caggtgatga	4380
ttgtgtggca	ggtagacagg	atgaggatta	acacatggaa	aagtttagta	aagtaccata	4440
tgaatgtttc	aaagaaagct	agacaatggc	tgtatagaca	tcactatgat	agccgtcatc	4500
caaaaataag	ttcagaagta	cacatcccac	taggagaggc	tagattagta	gtaacaacat	4560
attgggggtct	gcaaacagga	gaaagagatt	ggcacttggg	tcagggagtc	tccatagaat	4620
ggaggcgga	aaggtacaga	acacaagtag	accctggcct	ggcagaccaa	ctaattcata	4680
tgcatctact	tgattgtttt	tcagactctg	ccataaggaa	ggccatatta	ggacaaatag	4740
ttagccctag	gtgtgactac	caagcaggac	ataacaaggt	aggatctcta	caatatcttg	4800
cattaacagc	attaataaaa	ccaaaaagga	gaaagccacc	tttgcctagt	gttcagaaac	4860
tagtagagga	tagatggaac	aagccccaga	agaccaggga	ccacagagag	agccatacca	4920
tgaatggaca	ctagagcttt	tggaggagct	taaaaatgaa	gctgttagac	actttcctag	4980
gccatggctc	catggttttag	gacagtatgt	ctatagcact	tatggagata	catgggaagg	5040
agtcgaagcc	gtaataagaa	tactgcaaca	actattgttt	attcatttca	gaatcgggtg	5100
ccatcatagc	agaataaggca	ttataccaca	gagaagaggg	aggaatggag	ccagtagatc	5160
ctaacagaga	gccctggaac	catccaggaa	gtcagcctaa	aactgcttgt	actaattgtt	5220
attgtaaaaa	gtgttgctat	cattgtcaag	tgtgctttct	acagaagggc	ttaggcattt	5280
cctatggcag	gaagaagcgg	agacaacgac	gatcagctcc	tcctggcagt	aagaatcatc	5340
aagatcttat	accagagcag	taagtaactt	aattagcata	tgtaatggta	tctttacaaa	5400
tagtagcaat	agtagcatta	atagtagcat	ttttccttgc	aatatgtgtg	tggactatag	5460
tgtatataga	atataagaaa	ctgttaagac	aaaggaaaat	agataagtta	attaatagaa	5520
taagagaaag	ggcagaagac	agtggtaacg	agagtgatgg	agacacagac	gagttggctg	5580
agcttgtgga	gatggggcct	catgatcttt	ggaatgttaa	tgattttag	tgctagagaa	5640
aacttgtggg	tcacagtcta	ttatggggta	cctgtatgga	gagatgcaaa	gaccacttta	5700
ttttgcgcat	ctgatgctaa	agcatatagt	actgaaaaac	ataatgtctg	ggctacacat	5760
gcttgtgtac	ccacagatcc	aaaccacaaa	gagatgagtc	tgccaaatgt	aacagaaaaat	5820
tttaacatgt	ggaaaaatga	catggtagac	cagatgcagg	aagatataat	cagtgtatgg	5880
gatgaaagct	taaagccatg	tgtaaagata	acccctctct	gtgtcacttt	aaattgtagc	5940
gacgtcaata	gtaacaatag	tacagatagt	aatagtagtg	caagcaacaa	tagtcctgaa	6000
atcatgaaaa	actgctcttt	caatgtaact	acagaaataa	gaaataaaaag	gaagcaagaa	6060
tacgcgcttt	tctatagaca	agatgtagta	ccaat taata	gtgacaataa	aagtttatatt	6120
ctaataaaact	gtaataacctc	agttattaaa	caggcttgct	caaagggtgc	ttttcaacca	6180
attcccatac	attattgtgc	tccagctggt	tttgcgattc	taaaatgtaa	taataagact	6240
ttccaaggaa	caggaccatg	caaaaatgtc	agtacagtag	aatgtacaca	cggaattaaag	6300
ccagtgggat	caactcaact	actgctaact	ggcagtgtag	cagaaggaga	cataataatt	6360
agatctgaaa	atatctcaga	caatgctaaa	aacataatag	tacaacttaa	tgacactgta	6420
gaaatttgtgt	gtaccagacc	taataacaat	acaagaaaag	gtatacacat	gggaccagga	6480
caagtgtctc	acgcaacagg	ggaaataata	ggagatataa	ggaaagcata	ttgtaacatt	6540
agtagaaaag	attggaataa	cactttacgt	agagttagcta	aaaaactaag	agaacacttt	6600
aataaaacaa	tagacttttac	atcacctca	ggaggggaca	tagaaattac	aacacatagt	6660
tttaatttgtg	gaggagaatt	tttctattgt	aatacatcaa	cactgttcaa	tagtagttgg	6720
gatgagaata	acattaagga	cacaaatagt	acaaatgaca	acacaactat	cacaatacca	6780
tgtaaaaataa	aacaaattgt	gagaatgtgg	caaagaacag	gacaagcaat	atatgcccct	6840
cccacgcgag	gaaacattac	atgcaaatca	aatattacag	gattattatt	gacacgtgat	6900
ggaggaaaaca	ggaatggcag	tgagaatggc	actgagacct	tcagacctac	aggaggaaat	6960
atgaaagata	attggagaag	tgaattatat	aaatataaag	tagtagagct	tgagccacta	7020
ggagtagcac	ccaccaaggc	aaaaagaaga	gtggtggaga	gagaaaaaag	agcagtgga	7080
ataggagctg	tgttccttgg	gttcttggga	acagcaggaa	gcactatggg	cgcagcgtca	7140
ataacgctga	cggtacaggt	cagacaattg	ttgtctggca	tagtgcaaca	gcaaagcaat	7200
ttgctgaagg	ctatanaagc	gcaacagcat	ctgttggaagc	tcactgtctg	gggcattaaag	7260
cagctccagg	caagagtcc	ggctgtggaa	agatacctaa	aggatcaaca	gctcctagga	7320
atgtggggct	gctctggaaa	actcatctgc	accactaatg	tgccctggaa	tgctagtgtg	7380
agtaataaat	cttataggga	cttttgggag	aacatgacct	ggatacaatg	ggaaagggaa	7440
attaacaatt	acacaggaat	aatatacagt	ctaattgaag	aagcacaata	ccagcaggaa	7500
actaatgaaa	aggacttatt	ggcattggac	aagtggacaa	atgtgtggaa	ttggtttaac	7560
atatcaaact	ggctgtggta	cataaaaaata	ttcataatga	taataggagg	cttaataggt	7620
ttaagaataa	tttttgctgt	gcttgctata	gtaaatagag	ttaggcaggg	atactcacct	7680
ttgtcatttc	agacccttat	tccaaaccca	acggaagccg	acaggcccgg	aggaatcgaa	7740

```

gaaggaggtg gagagcaagg cagaaccaga tcgattcgat tagtgaacgg attcttagct 7800
cttgccctggg acgacctgcg gagcctgtgc ctcttcagtt accaccgatt gagagacttc 7860
gtcttgattg cagcgaggac tgtgggaact ctgggactca gggggtggga gatcctcaaa 7920
tatctggtga acctgtgatg gtattggggg caggaactaa agaatagtgc tattagtttg 7980
cttaatacca cagcaatagc agtagctgaa ggaacagata gaatcataga aatagcacia 8040
agagctttta gagctattct tcacatacct agaagaataa gacagggttt agaaagagct 8100
ttgctataaa atggggaaca agtgggtcaaa aagttggcct caggtaaggg acagaatgag 8160
gcgagctgct cctgctccag cagcagatgg agtgggagca gtgtctcaag atttggctaa 8220
gcatggggca atcacaagca gcaatacagc agctacaaat gatgactgtg cctggctgga 8280
agcacaacaa gaggaggagg ttggatttcc agtcagacct caggtwccat taagaccaat 8340
gacatacaaa ggagcttttg atcttagctt ctttttaaaa gaaaaggggg gactggatgg 8400
gttaatttac tccaagaaaa gacaagagat ccttgatctg tgggttcata acacacaagg 8460
ttacttcctt gactggcaaa actacacacc agggccaggg accabatacc cattgacatt 8520
tggatggtgc ttcaagctag taccagttga tccaagcgaa gtagaggaag ctaatgaagg 8580
agagaacaac tgctgtttac accccgcatg ccagcatgga atagaggatg aagaaagaga 8640
agtgtctaaag tggaagtttg acagctccct agcacggaga cacatagccc gagagctaca 8700
tccggagttt tacaaagact gctgacaaag aagtttctag cggggacttt ccgctgggga 8760
ctttccaggg gaggtgtggc ctgggcgggg ttggggagtg gctaaccctc agatgctgca 8820
tataagcagc tgcttttcgc ttgtactggg tctctcttgt tagaccagat ctgagcctgg 8880
gagctctctg gctaactagg gaaccactg cttaagcctc aataaagctt gccttgaggg 8940
cgcatgcaag ccg 8953

```

<210> 21

<211> 497

<212> PRT

<213> human immunodeficiency virus gag protein

<400> 21

```

Met Gly Ala Arg Ala Ser Ile Leu Ser Gly Gly Lys Leu Asp Asp Trp
 1           5           10           15
Glu Lys Ile Arg Leu Arg Pro Gly Gly Lys Lys Gln Tyr Arg Ile Lys
 20           25           30
His Leu Val Trp Ala Ser Arg Glu Leu Asp Arg Phe Ala Leu Asn Pro
 35           40           45
Gly Leu Leu Glu Ser Ala Lys Gly Cys Gln Gln Ile Leu Val Gln Leu
 50           55           60
Gln Pro Ala Leu Gln Thr Gly Thr Glu Glu Ile Lys Ser Leu Tyr Asn
 65           70           75           80
Thr Val Ala Thr Leu Tyr Cys Val His Gln Arg Ile Glu Ile Lys Asp
 85           90           95
Thr Lys Glu Ala Leu Asp Lys Ile Glu Glu Ile Gln Asn Lys Asn Lys
100          105          110
Gln Gln Thr Gln Lys Ala Glu Thr Asp Lys Lys Asp Asn Ser Gln Val
115          120          125
Ser Gln Asn Tyr Pro Ile Val Gln Asn Leu Gln Gly Gln Pro Val His
130          135          140
Gln Ala Leu Ser Pro Arg Thr Leu Asn Ala Trp Val Lys Val Ile Glu
145          150          155          160
Glu Lys Ala Phe Ser Pro Glu Val Ile Pro Met Phe Ser Ala Leu Ser
165          170          175
Glu Gly Ala Thr Pro Gln Asp Leu Asn Thr Met Leu Asn Thr Ile Gly
180          185          190
Gly His Gln Ala Ala Met Gln Met Leu Lys Asp Thr Ile Asn Glu Glu
195          200          205
Ala Ala Glu Trp Asp Arg Val His Pro Val His Ala Gly Pro Val Ala
210          215          220
Pro Gly Gln Val Arg Glu Pro Arg Gly Ser Asp Ile Ala Gly Thr Thr

```

225					230					235					240
Ser	Asn	Leu	Gln	Glu	Gln	Ile	Gly	Trp	Met	Thr	Gly	Asn	Pro	Pro	Ile
				245					250					255	
Pro	Val	Gly	Glu	Ile	Tyr	Lys	Arg	Trp	Ile	Ile	Leu	Gly	Leu	Asn	Lys
			260					265					270		
Ile	Val	Arg	Met	Tyr	Ser	Pro	Val	Ser	Ile	Leu	Asp	Ile	Arg	Gln	Gly
		275					280				285				
Pro	Lys	Glu	Pro	Phe	Arg	Asp	Tyr	Val	Asp	Arg	Phe	Phe	Lys	Ala	Leu
	290					295					300				
Arg	Ala	Glu	Gln	Ala	Thr	Gln	Asp	Val	Lys	Asn	Trp	Met	Thr	Asp	Thr
305					310					315					320
Leu	Leu	Val	Gln	Asn	Ala	Asn	Pro	Asp	Cys	Lys	Thr	Ile	Leu	Lys	Ala
			325						330					335	
Leu	Gly	Ser	Gly	Ala	Thr	Leu	Glu	Glu	Met	Met	Thr	Ala	Cys	Gln	Gly
			340					345					350		
Val	Gly	Gly	Pro	Gly	His	Lys	Ala	Arg	Val	Leu	Ala	Glu	Ala	Met	Ser
		355					360					365			
Gln	Val	Thr	Asn	Thr	Asn	Ile	Met	Met	Gln	Arg	Gly	Asn	Phe	Arg	Asp
	370					375					380				
His	Lys	Arg	Ile	Val	Lys	Cys	Phe	Asn	Cys	Gly	Lys	Gln	Gly	His	Ile
385					390					395					400
Ala	Lys	Asn	Cys	Arg	Ala	Pro	Arg	Lys	Lys	Gly	Cys	Trp	Lys	Cys	Gly
			405						410					415	
Lys	Glu	Gly	His	Gln	Met	Lys	Asp	Cys	Thr	Glu	Arg	Gln	Ala	Asn	Phe
			420					425					430		
Leu	Gly	Lys	Ile	Trp	Pro	Ser	Ser	Lys	Gly	Arg	Pro	Gly	Asn	Phe	Leu
		435					440					445			
Gln	Ser	Arg	Pro	Glu	Pro	Thr	Ala	Pro	Pro	Ala	Glu	Ser	Leu	Gly	Phe
	450					455					460				
Gly	Glu	Glu	Ile	Pro	Ser	Pro	Lys	Gln	Glu	Pro	Lys	Asp	Lys	Glu	Leu
465					470					475					480
Tyr	Pro	Leu	Thr	Ser	Leu	Arg	Ser	Leu	Phe	Gly	Ser	Asp	Pro	Leu	Ser
			485						490					495	

Gln

<210> 22
 <211> 1001
 <212> PRT
 <213> human immunodeficiency virus pol protein

<400> 22

Phe	Phe	Arg	Glu	Asp	Leu	Ala	Phe	Gln	Gln	Arg	Glu	Ala	Arg	Glu	Phe
1				5					10					15	
Ser	Pro	Glu	Gln	Thr	Arg	Ala	Asn	Ser	Pro	Thr	Ser	Arg	Glu	Pro	Arg
			20					25					30		
Val	Arg	Arg	Gly	Asp	Pro	Leu	Pro	Glu	Thr	Gly	Ala	Glu	Gly	Gln	Gly
		35					40					45			
Thr	Val	Ser	Ser	Asn	Phe	Pro	Gln	Ile	Thr	Leu	Trp	Gln	Arg	Pro	Leu
	50					55					60				
Val	Thr	Ile	Arg	Ile	Gly	Gly	Gln	Leu	Arg	Glu	Ala	Leu	Leu	Asp	Thr
65					70					75					80
Gly	Ala	Asp	Asp	Thr	Val	Leu	Glu	Glu	Ile	Asp	Leu	Pro	Gly	Lys	Trp
			85						90					95	
Lys	Pro	Lys	Met	Ile	Gly	Gly	Ile	Gly	Gly	Phe	Ile	Lys	Val	Arg	Gln
			100					105					110		

Tyr	Asn	Glu	Val	Pro	Ile	Glu	Ile	Glu	Gly	Lys	Lys	Ala	Ile	Gly	Thr	115	120	125
Val	Leu	Ile	Gly	Pro	Thr	Pro	Val	Asn	Ile	Ile	Gly	Arg	Asn	Met	Leu	130	135	140
Thr	Gln	Leu	Gly	Cys	Thr	Leu	Asn	Phe	Pro	Ile	Ser	Pro	Ile	Glu	Thr	145	150	155
Val	Pro	Val	Lys	Leu	Lys	Pro	Gly	Met	Asp	Gly	Pro	Lys	Ile	Lys	Gln	165	170	175
Trp	Pro	Leu	Thr	Glu	Glu	Lys	Ile	Lys	Ala	Leu	Thr	Gln	Ile	Cys	Ala	180	185	190
Glu	Leu	Glu	Glu	Gly	Lys	Ile	Ser	Arg	Ile	Gly	Pro	Glu	Asn	Pro		195	200	205
Tyr	Asn	Thr	Pro	Val	Phe	Ala	Ile	Lys	Lys	Lys	Asp	Ser	Thr	Lys	Trp	210	215	220
Arg	Lys	Leu	Val	Asp	Phe	Arg	Glu	Leu	Asn	Lys	Arg	Thr	Gln	Asp	Phe	225	230	235
Trp	Glu	Val	Gln	Leu	Gly	Ile	Pro	His	Pro	Ala	Gly	Leu	Lys	Lys	Lys	245	250	255
Lys	Ser	Val	Thr	Val	Leu	Asp	Val	Gly	Asp	Ala	Tyr	Phe	Ser	Val	Pro	260	265	270
Leu	Tyr	Glu	Asp	Phe	Arg	Lys	Tyr	Thr	Ala	Phe	Thr	Ile	Pro	Ser	Ile	275	280	285
Asn	Asn	Glu	Thr	Pro	Gly	Ile	Arg	Tyr	Gln	Tyr	Asn	Val	Leu	Pro	Gln	290	295	300
Gly	Trp	Lys	Gly	Ser	Pro	Ala	Ile	Phe	Gln	Cys	Ser	Met	Thr	Lys	Ile	305	310	315
Leu	Lys	Pro	Phe	Arg	Glu	Arg	Asn	Pro	Glu	Ile	Val	Ile	Tyr	Gln	Tyr	325	330	335
Met	Asp	Asp	Leu	Tyr	Val	Gly	Ser	Asp	Leu	Glu	Ile	Glu	Gln	His	Arg	340	345	350
Arg	Lys	Ile	Lys	Glu	Leu	Arg	Glu	His	Leu	Leu	Lys	Trp	Gly	Phe	Tyr	355	360	365
Thr	Pro	Asp	Lys	Lys	His	Gln	Lys	Glu	Pro	Pro	Phe	Leu	Trp	Met	Gly	370	375	380
Tyr	Glu	Leu	His	Pro	Asp	Lys	Trp	Thr	Val	Gln	Pro	Ile	Gln	Leu	Pro	385	390	395
Glu	Lys	Glu	Asp	Trp	Thr	Val	Asn	Asp	Ile	Gln	Lys	Leu	Val	Gly	Lys	405	410	415
Leu	Asn	Trp	Ala	Ser	Gln	Ile	Tyr	Pro	Gly	Ile	Lys	Ile	Lys	Glu	Leu	420	425	430
Cys	Lys	Leu	Ile	Arg	Gly	Ala	Lys	Ala	Leu	Thr	Asp	Ile	Val	Pro	Leu	435	440	445
Thr	Arg	Glu	Ala	Glu	Leu	Glu	Leu	Ala	Glu	Asn	Lys	Glu	Ile	Leu	Lys	450	455	460
Glu	Pro	Val	His	Gly	Val	Tyr	Tyr	Asp	Pro	Ala	Arg	Glu	Leu	Ile	Ala	465	470	475
Glu	Val	Gln	Lys	Gln	Gly	Leu	Asp	Gln	Trp	Thr	Tyr	Gln	Ile	Tyr	Gln	485	490	495
Glu	Pro	Phe	Lys	Asn	Leu	Lys	Thr	Gly	Lys	Tyr	Ala	Lys	Arg	Arg	Ser	500	505	510
Ala	His	Thr	Asn	Asp	Val	Lys	Gln	Leu	Ser	Gln	Val	Val	Gln	Lys	Ile	515	520	525
Ala	Leu	Glu	Ala	Ile	Val	Ile	Trp	Gly	Lys	Thr	Pro	Lys	Phe	Arg	Leu	530	535	540
Pro	Ile	Gln	Lys	Glu	Thr	Trp	Glu	Thr	Trp	Trp	Thr	Asp	Tyr	Trp	Gln	545	550	555
Ala	Thr	Trp	Ile	Pro	Glu	Trp	Glu	Phe	Val	Asn	Thr	Pro	Pro	Leu	Val			

				565					570					575	
Lys	Leu	Trp	Tyr	Gln	Leu	Glu	Lys	Glu	Pro	Ile	Met	Gly	Ala	Glu	Thr
			580					585					590		
Phe	Tyr	Val	Asp	Gly	Ala	Ser	Asn	Arg	Glu	Thr	Lys	Val	Gly	Lys	Ala
		595					600					605			
Gly	Tyr	Val	Thr	Asp	Lys	Gly	Arg	Gln	Lys	Val	Ile	Thr	Leu	Thr	Asp
	610					615					620				
Thr	Thr	Asn	Gln	Lys	Thr	Glu	Leu	Gln	Ala	Ile	Tyr	Leu	Ala	Leu	Gln
625					630					635					640
Asp	Ser	Gly	Ile	Glu	Val	Asn	Ile	Val	Thr	Asp	Ser	Gln	Tyr	Ala	Leu
				645					650					655	
Gly	Ile	Ile	Gln	Ala	Gln	Pro	Asp	Lys	Ser	Glu	Ser	Glu	Leu	Val	Asn
			660					665					670		
Gln	Ile	Ile	Glu	Glu	Leu	Ile	Lys	Lys	Glu	Lys	Val	Tyr	Leu	Ser	Trp
		675					680					685			
Val	Pro	Ala	His	Lys	Gly	Ile	Gly	Gly	Asn	Glu	Gln	Val	Asp	Lys	Leu
					695						700				
Val	Ser	Ser	Gly	Ile	Arg	Lys	Val	Leu	Phe	Leu	Asp	Gly	Ile	Asp	Lys
705					710					715					720
Ala	Gln	Glu	Glu	His	Glu	Lys	Tyr	His	Ser	Asn	Trp	Arg	Ala	Met	Ala
				725					730					735	
Ser	Asp	Phe	Asn	Leu	Pro	Pro	Val	Val	Ala	Lys	Glu	Ile	Val	Ala	Ser
			740					745					750		
Cys	Asp	Lys	Cys	Gln	Leu	Lys	Gly	Glu	Ala	Met	His	Gly	Gln	Val	Asp
		755					760					765			
Cys	Ser	Pro	Gly	Ile	Trp	Gln	Leu	Asp	Cys	Thr	His	Leu	Glu	Gly	Lys
	770					775					780				
Val	Ile	Leu	Val	Ala	Val	His	Val	Ala	Ser	Gly	Tyr	Ile	Glu	Ala	Glu
785					790					795					800
Val	Ile	Pro	Ala	Glu	Thr	Gly	Gln	Glu	Ala	Ala	Phe	Phe	Ile	Leu	Lys
				805					810					815	
Leu	Ala	Gly	Gly	Trp	Pro	Val	Lys	Ala	Ile	His	Thr	Asp	Asn	Gly	Ser
			820					825					830		
Asn	Phe	Thr	Ser	Gly	Ala	Val	Lys	Ala	Ala	Cys	Trp	Trp	Ala	Asp	Ile
		835					840					845			
Lys	Gln	Glu	Phe	Gly	Ile	Pro	Tyr	Asn	Pro	Gln	Ser	Gln	Gly	Val	Val
						855					860				
Glu	Ser	Met	Asn	Lys	Glu	Leu	Lys	Lys	Ile	Ile	Gly	Gln	Val	Arg	Glu
865					870					875					880
Gln	Ala	Glu	His	Leu	Lys	Thr	Ala	Val	Gln	Met	Ala	Val	Phe	Ile	His
				885					890					895	
Asn	Phe	Lys	Arg	Lys	Gly	Gly	Ile	Gly	Gly	Tyr	Ser	Ala	Gly	Glu	Arg
			900					905					910		
Ile	Ile	Asp	Ile	Ile	Ala	Thr	Asp	Ile	Gln	Thr	Lys	Glu	Leu	Gln	Lys
		915													

<210> 23
 <211> 101
 <212> PRT
 <213> human immunodeficiency virus tat protein

<400> 23
 Met Glu Pro Val Asp Pro Asn Arg Glu Pro Trp Asn His Pro Gly Ser
 1 5 10 15
 Gln Pro Lys Thr Ala Cys Thr Asn Cys Tyr Cys Lys Lys Cys Cys Tyr
 20 25 30
 His Cys Gln Val Cys Phe Leu Gln Lys Gly Leu Gly Ile Ser Tyr Gly
 35 40 45
 Arg Lys Lys Arg Arg Gln Arg Ser Ala Pro Pro Gly Ser Lys Asn
 50 55 60
 His Gln Asp Leu Ile Pro Glu Gln Pro Leu Phe Gln Thr Gln Arg Lys
 65 70 75 80
 Pro Thr Gly Pro Glu Glu Ser Lys Lys Glu Val Glu Ser Lys Ala Glu
 85 90 95
 Pro Asp Arg Phe Asp
 100

<210> 24
 <211> 116
 <212> PRT
 <213> human immunodeficiency virus rev protein

<400> 24
 Met Ala Gly Arg Ser Gly Asp Asn Asp Asp Gln Leu Leu Leu Ala Val
 1 5 10 15
 Arg Ile Ile Lys Ile Leu Tyr Gln Ser Asn Pro Tyr Ser Lys Pro Asn
 20 25 30
 Gly Ser Arg Gln Ala Arg Arg Asn Arg Arg Arg Trp Arg Ala Arg
 35 40 45
 Gln Asn Gln Ile Asp Ser Ile Ser Glu Arg Ile Leu Ser Ser Cys Leu
 50 55 60
 Gly Arg Pro Ala Glu Pro Val Pro Leu Gln Leu Pro Pro Ile Glu Arg
 65 70 75 80
 Leu Arg Leu Asp Cys Ser Glu Asp Cys Gly Asn Ser Gly Thr Gln Gly
 85 90 95
 Val Gly Asp Pro Gln Ile Ser Gly Glu Pro Cys Met Val Leu Gly Ala
 100 105 110
 Gly Thr Lys Glu
 115

<210> 25
 <211> 850
 <212> PRT
 <213> human immunodeficiency virus env protein

<220>
 <221> VARIANT
 <222> 554
 <223> Xaa = Any Amino Acid

<400> 25

Met 1	Glu	Thr	Gln	Thr 5	Ser	Trp	Leu	Ser	Leu 10	Trp	Arg	Trp	Gly	Leu 15	Met
Ile	Phe	Gly	Met	Leu 20	Met	Ile	Cys	Ser	Ala 25	Arg	Glu	Asn	Leu 30	Trp	Val
Thr	Val	Tyr	Tyr	Gly 35	Val	Pro	Val	Trp	Arg 40	Asp	Ala	Lys	Thr 45	Thr	Leu
Phe	Cys	Ala	Ser	Asp 50	Ala	Lys	Ala	Tyr	Ser 55	Thr	Glu	Lys	His 60	Asn	Val
Trp 65	Ala	Thr	His	Ala 70	Cys	Val	Pro	Thr	Asp 75	Pro	Asn	Pro	Gln 80	Glu	Met
Ser	Leu	Pro	Asn	Val 85	Thr	Glu	Asn	Phe	Asn 90	Met	Trp	Lys	Asn 95	Asp	Met
Val	Asp	Gln	Met	Gln 100	Glu	Asp	Ile	Ile	Ser 105	Val	Trp	Asp	Glu 110	Ser	Leu
Lys	Pro	Cys	Val	Lys 115	Ile	Thr	Pro	Leu	Cys 120	Val	Thr	Leu	Asn 125	Cys	Ser
Asp	Val	Asn	Ser	Asn 130	Asn	Ser	Thr	Asp	Ser 135	Asn	Ser	Ser	Ala 140	Ser	Asn
Asn 145	Ser	Pro	Glu	Ile 150	Met	Lys	Asn	Cys	Ser 155	Phe	Asn	Val	Thr 160	Thr	Glu
Ile	Arg	Asn	Lys	Arg 165	Lys	Gln	Glu	Tyr	Ala 170	Leu	Phe	Tyr	Arg 175	Gln	Asp
Val	Val	Pro	Ile	Asn 180	Ser	Asp	Asn	Lys	Ser 185	Tyr	Ile	Leu	Ile 190	Asn	Cys
Asn	Thr	Ser	Val	Ile 195	Lys	Gln	Ala	Cys	Pro 200	Lys	Val	Ser	Phe 205	Gln	Pro
Ile	Pro	Ile	His	Tyr 210	Cys	Ala	Pro	Ala	Gly 215	Phe	Ala	Ile	Leu 220	Lys	Cys
Asn 225	Asn	Lys	Thr	Phe 230	Asn	Gly	Thr	Gly	Pro 235	Cys	Lys	Asn	Val 240	Ser	Thr
Val	Gln	Cys	Thr	His 245	Gly	Ile	Lys	Pro	Val 250	Val	Ser	Thr	Gln 255	Leu	Leu
Leu	Asn	Gly	Ser	Val 260	Ala	Glu	Gly	Asp	Ile 265	Ile	Ile	Arg	Ser 270	Glu	Asn
Ile	Ser	Asp	Asn	Ala 275	Lys	Asn	Ile	Ile	Val 280	Gln	Leu	Asn	Asp 285	Thr	Val
Glu	Ile	Val	Cys	Thr 290	Arg	Pro	Asn	Asn	Asn 295	Thr	Arg	Lys	Gly 300	Ile	His
Met 305	Gly	Pro	Gly	Gln 310	Val	Leu	Tyr	Ala	Thr 315	Gly	Glu	Ile	Ile 320	Gly	Asp
Ile	Arg	Lys	Ala	Tyr 325	Cys	Asn	Ile	Ser	Arg 330	Lys	Asp	Trp	Asn 335	Asn	Thr
Leu	Arg	Arg	Val	Ala 340	Lys	Lys	Leu	Arg	Glu 345	His	Phe	Asn	Lys 350	Thr	Ile
Asp	Phe	Thr	Ser	Pro 355	Ser	Gly	Gly	Asp	Ile 360	Glu	Ile	Thr	Thr 365	His	Ser
Phe	Asn	Cys	Gly	Gly 370	Glu	Phe	Phe	Tyr	Cys 375	Asn	Thr	Ser	Thr 380	Leu	Phe
Asn 385	Ser	Ser	Trp	Asp 390	Glu	Asn	Asn	Ile	Lys 395	Asp	Thr	Asn	Ser 400	Thr	Asn
Asp	Asn	Thr	Thr	Ile 405	Thr	Ile	Pro	Cys	Lys 410	Ile	Lys	Gln	Ile 415	Val	Arg
Met	Trp	Gln	Arg	Thr 420	Gly	Gln	Ala	Ile	Tyr 425	Ala	Pro	Pro	Ile 430	Ala	Gly
Asn	Ile	Thr	Cys	Lys 435	Ser	Asn	Ile	Thr	Gly 440	Leu	Leu	Leu	Thr 445	Arg	Asp
Gly	Gly	Asn	Arg	Asn	Gly	Ser	Glu	Asn	Gly	Thr	Glu	Thr	Phe	Arg	Pro

<220>

<221> VARIANT

<222> 132

<223> Xaa = Any Amino Acid

<400> 26

Met	Gly	Asn	Lys	Trp	Ser	Lys	Ser	Trp	Pro	Gln	Val	Arg	Asp	Arg	Met
1				5					10					15	
Arg	Arg	Ala	Ala	Pro	Ala	Pro	Ala	Ala	Asp	Gly	Val	Gly	Ala	Val	Ser
			20					25					30		
Gln	Asp	Leu	Ala	Lys	His	Gly	Ala	Ile	Thr	Ser	Ser	Asn	Thr	Ala	Ala
		35					40					45			
Thr	Asn	Asp	Asp	Cys	Ala	Trp	Leu	Glu	Ala	Gln	Thr	Glu	Glu	Glu	Val
	50					55					60				
Gly	Phe	Pro	Val	Arg	Pro	Gln	Val	Pro	Leu	Arg	Pro	Met	Thr	Tyr	Lys
65				70						75					80
Gly	Ala	Phe	Asp	Leu	Ser	Phe	Phe	Leu	Lys	Glu	Lys	Gly	Gly	Leu	Asp
				85					90					95	
Gly	Leu	Ile	Tyr	Ser	Lys	Lys	Arg	Gln	Glu	Ile	Leu	Asp	Leu	Trp	Val
			100					105					110		
His	Asn	Thr	Gln	Gly	Tyr	Phe	Pro	Asp	Trp	Gln	Asn	Tyr	Thr	Pro	Gly
		115						120				125			
Pro	Gly	Thr	Xaa	Tyr	Pro	Leu	Thr	Phe	Gly	Trp	Cys	Phe	Lys	Leu	Val
	130					135					140				
Pro	Val	Asp	Pro	Ser	Glu	Val	Glu	Glu	Ala	Asn	Glu	Gly	Glu	Asn	Asn
145					150					155					160
Cys	Leu	Leu	His	Pro	Ala	Cys	Gln	His	Gly	Ile	Glu	Asp	Glu	Glu	Arg
				165					170					175	
Glu	Val	Leu	Lys	Trp	Lys	Phe	Asp	Ser	Ser	Leu	Ala	Arg	Arg	His	Ile
			180					185					190		
Ala	Arg	Glu	Leu	His	Pro	Glu	Phe	Tyr	Lys	Asp	Cys				
		195					200								

<210> 27

<211> 158

<212> PRT

<213> human papilloma virus E6 protein

<400> 27

Met	Ala	Arg	Phe	Glu	Asp	Pro	Thr	Arg	Arg	Pro	Tyr	Lys	Leu	Pro	Asp
1				5					10					15	
Leu	Cys	Thr	Glu	Leu	Asn	Thr	Ser	Leu	Gln	Asp	Ile	Glu	Ile	Thr	Cys
			20					25					30		
Val	Tyr	Cys	Lys	Thr	Val	Leu	Glu	Leu	Thr	Glu	Val	Phe	Glu	Phe	Ala
		35					40					45			
Phe	Lys	Asp	Leu	Phe	Val	Val	Tyr	Arg	Asp	Ser	Ile	Pro	His	Ala	Ala
	50					55					60				
Cys	His	Lys	Cys	Ile	Asp	Phe	Tyr	Ser	Arg	Ile	Arg	Glu	Leu	Arg	His
65				70					75						80
Tyr	Ser	Asp	Ser	Val	Tyr	Gly	Asp	Thr	Leu	Glu	Lys	Leu	Thr	Asn	Thr
			85					90						95	
Gly	Leu	Tyr	Asn	Leu	Leu	Ile	Arg	Cys	Leu	Arg	Cys	Gln	Lys	Pro	Leu
			100					105					110		
Asn	Pro	Ala	Glu	Lys	Leu	Arg	His	Leu	Asn	Glu	Lys	Arg	Arg	Phe	His
		115					120						125		

Lys Ile Ala Gly His Tyr Arg Gly Gln Cys His Ser Cys Cys Asn Arg
 130 135 140
 Ala Arg Gln Glu Arg Leu Gln Arg Arg Arg Glu Thr Gln Val
 145 150 155

<210> 28
 <211> 105
 <212> PRT
 <213> human papilloma virus E7 protein

<400> 28
 Met His Gly Pro Lys Ala Thr Leu Gln Asp Ile Val Leu His Leu Glu
 1 5 10 15
 Pro Gln Asn Glu Ile Pro Val Asp Leu Leu Cys His Glu Gln Leu Ser
 20 25 30
 Asp Ser Glu Glu Glu Asn Asp Glu Ile Asp Gly Val Asn His Gln His
 35 40 45
 Leu Pro Ala Arg Arg Ala Glu Pro Gln Arg His Thr Met Leu Cys Met
 50 55 60
 Cys Cys Lys Cys Glu Ala Arg Ile Glu Leu Val Val Glu Ser Ser Ala
 65 70 75 80
 Asp Asp Leu Arg Ala Phe Gln Gln Leu Phe Leu Lys Thr Leu Ser Phe
 85 90 95
 Val Cys Pro Trp Cys Ala Ser Gln Gln
 100 105

<210> 29
 <211> 843
 <212> DNA
 <213> human papilloma virus

<400> 29
 cgggtgtatat aaaagatgtg agaaacgcac cacaatacta tggcgcgctt tgaggatcca 60
 acacggcgac cctacaagct acctgatctg tgcacggaac tgaacacttc actgcaagac 120
 atagaaataa cctgtgtata ttgcaagaca gtatttgaac ttacagaggt atttgaattt 180
 gcattcaaag atttatttgt ggtgtataga gacagtatac cgcattgctgc atgccataaa 240
 tgtatagatt tttatttctag aattagagaa ttaagacatt attcagactc tgtgtatgga 300
 gacacattag aaaaactaac taacactggg ttatacaatt tattaataag gtgcctgcgg 360
 tgccagaaac cgttgaatcc agcagaaaaa cttagacacc ttaatgaaaa acgacgattc 420
 cacaaaatag ctgggcacta tagaggccag tgccattcgt gctgcaaccg agcacgacag 480
 gagagactcc aacgacgcag agaaacacaa gtataatatt aagtatgcat ggacctaagg 540
 caacattgca agacattgta ttgcatttag agcctcaaaa tgaaattccg gttgaccttc 600
 tatgtcacga gcaattaagc gactcagagg aagaaaacga tgaaatagat ggagttaatc 660
 atcaacattt accagcccga cgagccgaac cacaacgtca cacaatgttg tgtatgtgtt 720
 gtaagtgtga agctagaatt gagctagtag tagaaagctc agcagacgac cttcgagcat 780
 tccagcagct gtttctgaaa accctgtcct ttgtgtgtcc gtggtgtgca tcccagcagt 840
 aag 843

<210> 30
 <211> 11835
 <212> DNA
 <213> Epstein Barr virus

<400> 30
 ggccgctgtt cacctaaagt gacgcaaggt ctgtcagccg ccagggtccg ttaccaggc 60

tttcaggtgt	ggaatttaga	tagagtgggt	gtgtgctctt	gtttaattac	accaagatca	120
ccaccctcta	tccatatccc	acaattgata	aacctccgca	tgtccaacca	ccacgttgaa	180
caggatgtgg	caccctaaga	ggacgcaggc	atacaagggt	attaccaggt	ccttgtatgc	240
ctggtgtccc	cttagtggga	cgcaggccta	ggtagcatca	tttacctaa	aagcagtgac	300
cttggttggt	ctttaagggt	ggtccaatcc	ataggctttt	tttgtgaaaa	cccggggatc	360
ggactagcct	tagagtaact	caaggccaag	catttcacac	ctgcaaatgc	accatgtaac	420
cacagatcta	aactgaaagt	tgcagcttta	gatggcaagg	aaacttgggt	ttcaggcata	480
gaaagcctgg	ctcactatag	cagcccatgt	ttgttccagg	gtgggggaaa	ggcacgtgcc	540
cttagaaaaa	ttagctgcaa	aaattctatt	gtgttgggag	agcctctata	tctaaaggcc	600
tttcttcaca	atacaaagt	tactaacgtc	tgcctctctg	agacctgcta	tgtggctaga	660
cgtatggcct	acccaagacg	ttgggggtct	cgggtaggcc	atgattcttc	caggcatagg	720
ttacaaccag	tactgctat	caagcctact	cagttcccaa	cgcagcacat	acccccgcc	780
tctcctgcca	tgaggactta	tggcagtgtt	tactgttctg	cttttactct	tggaccaggc	840
tgtcattcta	tcagaataac	aggggaagca	aggccccctg	cttcagcggg	acacgtgttt	900
ctagaatctc	ggagccaata	actacctgcc	cctctaattct	gtatgctgca	tgaaaaacca	960
catacacgtg	atgtaagttt	agccagttta	ttgttacacc	aatgccccga	aagtctcccc	1020
ctgtcccttt	gggtctcagg	accagccct	ggagctcggg	ggcgcccg	tggcccaccg	1080
gggtccgtgg	gtccgtgcc	ccgtccggc	ggggggtggc	cggtgcagc	cggtccggg	1140
gttccggccc	tggagctcgg	ggggcgccg	gggtggcccac	cggtccgt	gggtccgtg	1200
ccccgctccg	gcggggggtg	gcccgtgca	gcccgggtccg	gggttccggc	cctggagctc	1260
ggggggcggc	cggttgcccc	accgggtccg	ctgggtccgc	tgccccgctc	cggcgggggg	1320
tggccggctg	cagccgggtc	cggggttccg	gccctggagc	tcggggggcg	gccgggtggc	1380
ccaccgggtc	cgtgggtcc	gctgccccgc	tccggcgggg	ggtggccggc	tgcagccggg	1440
tccggggttc	cggccctgga	gctcgggggg	cggccgggtg	gcccaccggg	tccgctgggt	1500
ccgctgcccc	gctccggcgg	gggggtggccg	gctgcagccg	gggtccgggg	tccggccctg	1560
gagctcgggg	ggcgcccg	tggcccaccg	gggtccgtgg	gtccgtgcc	ccgctccggc	1620
gggggggtgg	cggtgcagc	cggttccggg	gttccggccc	tggagctcgg	ggggcgccg	1680
ggtggccac	cggttccgt	gggtccgtg	ccccgctccg	gcgggggggtg	gccggctgca	1740
gccgggtccg	gggttccggc	cctggagctc	ggggggcggc	cggttgccc	accgggtccg	1800
ctgggtccgc	tgccccgctc	cggcgggggg	tggccggctg	cagccgggtc	cggtgttccg	1860
gccctggagc	tcggggggcg	gccgggtggc	ccaccgggtc	cgtgggtcc	gctgccccgc	1920
tccggcgggg	ggtggccggc	tgcagccggg	tccgggttcc	cggccctgga	gctcgggggg	1980
cggccgggtg	gcccaccggg	tccgtgggt	ccgtgcccc	gctccggcgg	gggtggccg	2040
gctgcagccg	gggtccgggt	tccggccctg	gagctcgggg	ggcgcccg	tggcccaccg	2100
gggtccgtgg	gtccgtgcc	ccgtccggc	ggggggtggc	cggtgcagc	cggttccggg	2160
gttccggccc	tggagctcgg	ggggcgccg	ggtggcccac	cggttccgt	gggtccgtg	2220
ccccgctccg	gcggggggtg	gccggctgca	gccgggtccg	gggttccggc	cctggagctc	2280
ggggggcggc	cggttgcccc	accgggtccg	ctgggtccgc	tgccccgctc	cggcgggggg	2340
tggccggctg	cagccgggtc	cggtgttccg	gccctggagc	tcggggggcg	gccgggtggc	2400
ccaccgggtc	cgtgggtcc	gctgccccgc	tccggcgggg	ggtggccggc	tgcagccggg	2460
tccggggttc	cggccctgga	gctcgggggg	cggccgggtg	gcccaccggg	tccgctgggt	2520
ccgctgcccc	gctccggcgg	gggggtggccg	gctgcagccg	gggtccgggg	tccggccctg	2580
gagctcgggg	ggcgcccg	tggcccaccg	gggtccgtgg	gtccgtgcc	ccgctccggc	2640
gggggggtgg	cggtgcagc	cggttccggg	gttccggccc	tggagctcgg	ggggcgccg	2700
ggtggccac	cggttccgt	gggtccgtg	ccccgctccg	gcgggggggtg	gccggctgca	2760
gccgggtccg	gggttccggc	cctggagctc	ggggggcggc	cggttgccc	accgggtccg	2820
ctgggtccgc	tgccccgctc	cggcgggggg	tggccggctg	cagccgggtc	cggtgttccg	2880
gccctggagc	tcggggggcg	gccgggtggc	ccaccgggtc	cgtgggtcc	gctgccccgc	2940
tccggcgggg	ggtggccggc	tgcagccggg	tccgggttcc	cggccctgga	gctcgggggg	3000
cggccgggtg	gcccaccggg	tccgtgggt	ccgtgcccc	gctccggcgg	gggtggccg	3060
gctgcagccg	ggtcggggg	tccggccctg	gagctcgggg	ggcgcccg	tggcccaccg	3120
gggtccgtgg	gtccgtgcc	ccgtccggc	ggggggtggc	cggtgcagc	cggttccggg	3180
gttccggccc	tggagctcgg	ggggcgccg	ggtggcccac	cggttccgt	gggtccgtg	3240
ccccgctccg	gcggggggtg	gccggctgca	gccgggtccg	gggttccggc	cctggagctc	3300
ggggggcggc	cggttgcccc	accgggtccg	ctgggtccgc	tgccccgctc	cggcgggggg	3360
tggccggctg	cagccgggtc	cggtgttccg	gccctggagc	tcggggggcg	gccgggtggc	3420
ccaccgggtc	cgtgggtcc	gctgccccgc	tccggcgggg	ggtggccggc	tgcagccggg	3480

tccgggggttc	cgcccttggga	gctcggggggg	cgcccggggtg	gcccaccggg	tccgctgggt	3540
ccgctgcccc	gctccggcgg	ggatgggggt	gcgctcccag	gccggaccct	ggtgccaggc	3600
agggaccccc	cgccaaccgc	ttcatggggg	gggaggccgc	cgcaaggacg	ccgggcccggc	3660
tgggaggtgt	gcaccccccg	agcgtctgga	cgacgctggc	gagccgggcc	agctcgccct	3720
cttttatccct	ctttttgggg	tctctgtgca	ataccttaag	gtttgctcag	gagtgggggg	3780
cttctcattg	gttaattcag	gtgtgtgatt	ttagcccgtt	gggttacatt	aaggtgtgta	3840
accaggtggg	tggtagcttg	aggtcattct	attgggataa	cgagaggagg	aggggctaga	3900
ggccccgcag	atttggggta	ggcggagcct	caggagggtc	ccctccatag	ggttgaacca	3960
ggagggggag	gacggggctc	cgccccgata	tacctagtgg	gtggagccta	gaggtaggta	4020
tccatagggt	tccattatcc	tggaggatcc	ctaagctccg	cccctatata	ccaggtgggt	4080
ggagctaggt	aggattcagc	taggttccta	ctgggggtacc	cccctaccct	accttaaggt	4140
gcgccaccct	tcctccttcc	gttttaattg	tagaataacc	tataggttat	taacctagtg	4200
gtggaatagg	gtattgcagc	tgggtatata	cctataggta	tatagaacct	agaggaaggg	4260
aaccctatag	tgtaatccct	ccccccccta	cccccccctc	ccttacgggt	gcctgagccc	4320
atccccacc	ccagcacccc	ggggtgacgt	ggcaccccgc	gtgccttact	gacttgctcac	4380
ctttgcacat	ttggtcagct	gaccgatgct	cgccacttcc	tgggtcatga	cctggcctgt	4440
gccttgtccc	atggacaatg	tcctccagc	gtgggtggctg	cctttgggat	gcatacattt	4500
gagccactaa	gcccccggtt	ctgccttgc	ctgcctcacc	atgacacact	aagccccctgc	4560
taatccatga	gccccgcctt	taggaagcac	cacgtcccgg	ggacggaagc	tggatttttg	4620
ccagtcttca	attttgggga	gtgggtttgt	gtgagccgga	agttggcaat	gggggtgagg	4680
tggcgctggg	taagctgacg	acctcccaag	gtctctcacc	ctgggtacac	aggtggggcg	4740
gcagcctcta	actttggctg	tggcctctat	ttcctccctt	tcctagccag	ggccatgtgt	4800
tcctgcatgt	ctacttgccct	cctgtgggtg	cagagcttgg	ccctggggcc	aacccccgcc	4860
ttgggagcct	gtaggggcca	acacccttgg	tttgtttgtg	ttcctgtttg	ctggcaactt	4920
actggcagcc	gagcagattc	taatgggcgc	ccgccttctt	tctctcttgt	tttattaata	4980
gaatctcagc	caggacctat	acctgagact	tcaaagtctg	gtcctgggtt	ctgagacccc	5040
caagatttgt	catgcacacc	tgcacacctg	ttggtattgg	gtttctatct	ttgagtgtga	5100
aagtttgtaa	aaaaattcat	aaaatgtcac	taattcctct	tacctgttta	gggtatttgt	5160
caattcttca	gctgacctat	tttcaatttg	cctaagggtg	caatttaaga	tgtggttaat	5220
taaccatttt	cctgtctgac	accactgcat	gggcaaccgg	gttccatggc	acatttagag	5280
ataaacatag	atgtcttgct	ttgtctcatgt	gcagaggagg	gggtgttggt	gtgcaatata	5340
gtttctggat	tccaaattga	gttgggggtg	ctattttcac	tatggaatta	aattactgac	5400
attagacagt	ggacaccggg	ctatatgtgt	ggatgtctgt	ggcttgtcat	ttcctcttag	5460
aaggtaatcc	cccatcttaa	cttcccttta	aattgtgatg	caagccctgg	gttattttata	5520
gaatgattat	ctaggtttga	tagtctgaag	gctgggcaga	gaatgtttgt	aattttttatt	5580
caccttcttt	acccccacg	agtatccagt	tctagaagat	ctcctgatat	cccggtctgc	5640
cattattccc	ttgagtgtta	tagcttcttc	ttaaacttaag	caagagctcc	aggatgttag	5700
cttttttggg	ggggctgggt	gtcaggaaga	ggttccagtg	ttgtccttta	tttttagatg	5760
ttagctttgt	gttaggttag	tatgggctgg	gtattcacta	gtgaaggcaa	ctaacacagt	5820
tagacgtgct	agttgtgccc	actgggtgtt	atccggtccc	aaatgtcacc	acagaacaca	5880
gggggctgga	tttggcagca	gcacttgctg	ttttgttgat	ttttaccctg	gtatcagagt	5940
gggggatgct	agccaattta	gcttccccct	cccttaacag	ggggtctcgc	ggggtgccaa	6000
ttgtcgccct	ccttcccccg	cttccccctg	ttaaacttata	gcatgatagg	taggtcacct	6060
aacgtggaag	cctgggtgggt	gatccttccct	cggtagggag	cgcttagggc	tgttgagctc	6120
aacagcccca	cctgggtaaa	atgtatgttc	taaagagtta	cccaattata	acaaaactgt	6180
tgtagggtaa	cgaagacctg	atggaagtgg	tattgttgcc	gttgaaagac	gggtgtcctg	6240
gctcaagttc	gcacttcccta	tacagtgtta	aagccttgta	tcggaagttt	gggcttcctc	6300
ccagtgtact	cgataatgtc	gactgtcgcg	aaaggtttgg	accgtcttcc	agtaggtgtt	6360
gggggtccca	aatcacgagg	ttaggcaggt	gcacttggct	cttaggagg	gacccttaag	6420
ccagacaatg	tagtgccctt	tttttttgca	catttggcctt	attattaatt	tcttggttaac	6480
actaattctg	ttctatgacc	ctgtgttttt	agatggccgt	tgaacgtgtc	actgagctga	6540
atttgagcgc	agctacttga	cctttgcccc	cgtgcctcca	gcgctgataa	gtgctgcgtc	6600
cacttttgtgt	tacaggtggg	ccaaacctcc	agaatatcaa	ttgggtgggg	cctgggtggg	6660
tgcataaggc	agtaggtttg	aggtgacctc	cttgaccat	gtggatccag	tgtcctgatc	6720
ctggaccttg	actatgaaac	aattctaaaa	aaatgcatca	tagtccagtg	tccagggaca	6780
gtgcactcgg	aagtctcatc	atctccgttt	gtgtgttttag	tgtggccagt	acggccaccc	6840
ctgtgccacg	ccctggcatg	ctgctgacat	ctggccgcca	atttcagcgg	gcccttttcc	6900

cccttggttca	ccccatagca	agaagggtag	gttacatggg	tattttccca	tcagcacctg	6960
actggccggt	gcaattagag	gagagggcaa	caacgcaagg	ctgttggttt	atttggttta	7020
caagagctgc	ggcggtcgat	gggttcactg	attacggttt	cctagattgt	acagatgaac	7080
tagaactgtc	acaatctatg	gggtcgtaga	cagtgtgctt	accagacttc	catggaagat	7140
gtgaatttgc	tgctagctat	atgggtgggtg	ctatgggctc	cctagggact	catgtagtgg	7200
ggctttgtga	tagctaataa	atgtggcagc	tgttggttgt	actggaccct	gaattggaaa	7260
cagtaacttg	gattctgtaa	cacttcattg	gtcccgtagt	gacaactatg	ctgaatatct	7320
tgaatatggg	aggagggggg	ctttgggttc	cattgtgtgc	cctttcctgg	ccaacgtgag	7380
ggctcctagt	ttatagggcg	tggcagtttt	cttgagggct	aataaccggg	gtgaggcggt	7440
tgctacaggt	gctagaccct	ggagttgaac	cagtaccact	cggttacaaa	gtcatggtct	7500
agtagttgtg	accctgcaaa	gctacgtggg	gatgagcagc	cagggacttt	ggttggcaag	7560
cagacaggcg	gcgcattgga	accccagagg	agtgtccggg	ggccacctct	ttggttctgt	7620
acatattttg	ttattgtaca	taacctatga	gttggtctgt	gtgcactcca	tctggtaagg	7680
gggctgggtg	ggacgcctgt	gtttagtcta	tgccaatggt	tacctgcctt	gggttactat	7740
tccaaacgac	cacacctttg	aggacacctg	gagccctgat	cattctcggc	ttttactgcc	7800
acctggcttc	tgttgggtca	gacagtttgg	tgcgctagt	gtgtgcttag	cagcaacgca	7860
caccaggctg	actgccttag	cagtgtggcc	ctttattgtg	gcatcctaag	gagggattct	7920
ggagtgcctt	tcgcgtgaag	catgccctga	gacgtactcg	agttaggact	taatcgctcc	7980
tgtgccgctg	gatgagggag	cgccaatttg	tacatcctag	ctctggccat	agagttagcc	8040
cacctttgtg	tctccctttg	gcctttgcgg	tgccaatttc	cgggtggttt	ccttttccgc	8100
ccgtttatcc	aatagcatgt	aagagaggtt	gcctagattt	ggcaactttg	agggaacggt	8160
ccgtgtagct	ggtgacctaa	caccgcacca	tcaccaccgg	acagattctg	aacttgctct	8220
gtggtgtttg	gtgtgggttt	ggggtacgca	ggagtacgtt	ggaatgcttt	ggagccgaga	8280
gggatgggccc	cgcttgtgcg	cttatgtgtt	acacggtgcc	aataaccggc	ccggtgcggc	8340
tgccccgtga	cccgtgggccc	ttaccttcc	ggccatcggg	ggaccctggg	gctaggggtcc	8400
cttgtgttgc	tttctgccat	aggggggaaa	gcatcgccct	cagaattggc	tgctccggtg	8460
gaacatttga	ggcctactgt	atccgtgtcc	tgacaacatt	ccccgcaaac	atgacatggg	8520
ttaatttaaa	catgttttgt	ttgcttggga	atgctcttag	ggcctggaag	cttgtcattg	8580
gattcatcgt	ttcctgaact	acaggcgtag	ggcctattgt	agcaggcatg	tcttcattcc	8640
tgcgtagcga	atggcatgaa	ggcacagcct	gttaccattg	gcaccttttt	tccatgtaaa	8700
cctccgtgat	cctgggtcct	ttggagactc	aagtgtgaat	ttgttttggt	gttcggcgcc	8760
agggtactct	gacgttggaa	tgtcaactca	acttgggcac	ctcgataacc	ggctcgtggc	8820
tcgtacagac	gattgtttgg	ctctgtaact	tgccagggac	ggctgacgat	gtgttttagc	8880
tgccacttgc	atccggcgct	ttggttactc	gggagactaa	tggggggtgt	ggtatggcac	8940
aggctggggg	tgagtctggg	gatgtccctg	ggcggtgtgt	cagcccatcc	gccctctggg	9000
gatgagatgt	tcaggggtgg	ccggtaccct	acgctgccga	tttacataat	ataaattgta	9060
aatgctgcag	tagtagggat	ctggacgcgc	gacctgctac	tcttcggaaa	cgccaacca	9120
ggagcgtcgc	ctctggcccc	atactccgc	catgcgactg	ctcgccccct	cccaggcctc	9180
cctggtgagc	ccttgccgct	ccccgcattc	ctgctttcgg	cgccccctgc	gatcccgatg	9240
acagcaggcc	tttctctccc	ccgttaatga	aaagaatgac	agtgaggttg	tgacagaagg	9300
acagctttat	tcagtttaca	gagtgccttc	ggaggctacg	atattcccgt	taaatgtctt	9360
gttgattctc	tcaaaggtgg	ggagggagga	gctctccaca	acaatgttcc	ctggcagcgt	9420
gagcgcgcag	ccctgccgtt	ggatgtatct	tctcatgatg	gtgctgatag	aggggtctcc	9480
ggcgtagatg	aaaaaggcct	gggccatgct	ctggccgggtc	acgatcgtta	tgggggttgt	9540
ggaaatgttc	cggaccgtca	gcttgagggg	ctggcccggc	ttccactcct	gtgggtagac	9600
gtagaagacc	gggttggagg	agtgggacac	gacaacggcc	gtaatcttgg	agctcagggg	9660
ggcctcgtag	gtgttgttgt	attccagctc	cgtgatgaaa	ttaggaggaa	taatcacagg	9720
ggagccaaag	tagcggatgt	ctgtggattc	cccgctccag	cgccagtggc	tcttagggta	9780
ggggttgtaa	cggaaggcaa	taatcacatc	atccaatagg	gtcatgcccc	ccttgacgtt	9840
cagcgggccc	tctcgtttca	ggctccggcg	gtcccaggag	actcggacgt	agcccttacc	9900
gcggcgatag	gcgtttaccg	gacacacctt	ccccgggaat	gtgtgaatac	gggcgtagta	9960
ctttagaat	gggggcgtgt	gctgcgccag	caggtaaggc	aggcactcgt	cctggctggg	10020
gacgggagag	ccactgagga	agatctgggg	ctcgctgggtg	tttagcttgt	ccccgctctg	10080
ggtgcaggag	cgtgtcagct	gaatgtcgct	ctgcccgggc	agaatctgca	ggtagaggta	10140
ggggttcttg	accaatctga	tgggcacaa	gtaccaggta	aacttccctt	tctctatgaa	10200
caggctgcgc	ggattcagga	cgcttagcac	gatgtcctgg	tcagagtgca	taacgaagaa	10260
gggcttgagg	aatacctcgt	tgtcttccgc	tccaaagaac	aaaaacgcga	ccgtaaagta	10320

gcggctgccg	taggtggtcg	tgttgaagga	gaaagaaggt	aacttgaagc	tgagtatctg	10380
gccaccgag	gggcaggag	gcagctcttg	gcactgcgcg	tccagctgca	atacctgctt	10440
gttggtagcg	cggacgtatg	aggggaagat	ctcgtacttc	cacacgcctc	tcatgaacga	10500
cgtgtctggt	ttttcagtgg	gccgcaggcg	gcggaggctg	ttcctgaacg	acgagcgccg	10560
ggacgctagt	gctgcatggg	ctcctccggg	gtaagcttcg	gccatggccg	gagctcgctg	10620
acgggcaagg	tgagagtcgg	ggggcgggcg	acggtgcggc	cccaatacaa	ctctccgctc	10680
gttagctggt	agaatatccg	cccggcgtct	aggttgtcac	ttcgctcggc	cggccagaag	10740
agcgcaagtc	caagtctggt	gctggggccg	atgtgcagcg	gtttgtgccc	gcagttgtag	10800
actgtcattt	ttatgggcga	gtgggcgggc	cacacgcgcg	ggcgcagcac	ccattggctg	10860
cacgcgcct	cctggaatgt	aaacccccag	agagaggggc	tgccgccttg	gagatggccc	10920
tgtgccatca	catgtatttc	ctccttgggt	ggaacaacgg	cgctcgtgctc	cgggtggagg	10980
gggaatagcg	tccaggcatc	tttcagggtc	acgagaccgg	ggcccatgct	cagagaacag	11040
ccctcccggg	cgggtgggcgg	cccgggctcc	agcagaacgt	cgcagacca	gccctcctcg	11100
gccctgtcca	cctgtatgtc	cagggtgcacg	gacccggagg	ctgctgtctcg	tgacatggcc	11160
aggcctgggtg	ccagccgacc	acgtcccgtg	tcccagccga	ggccgcgcca	gagcagagcc	11220
cgggactgac	tcagggccac	atcccctcgg	cccgcggacg	ccgcctcgcc	agccccggg	11280
ccttcattggg	cccgttttct	acctctctcc	ggcaccacag	cctgggtcagc	cgcagaggaa	11340
gcatgacctt	ggggtgggac	ggggcaggcg	tgatcctggg	cgcaatcttt	gccgatcccc	11400
acaccttcac	tccttggttag	gttgatagaa	tgtcggtagc	acgccacggg	gggcggggccc	11460
gcatagggaa	aagccaggga	gagcgatgtg	ggcgaggatg	ggctcaggcg	gccccagaca	11520
cgcaattttgc	ccccctgggc	ggccgcagcc	tgccccctcg	cggcccgtgc	cccagctccg	11580
tcacggggggg	cgcataggag	gggtatatct	aggatagccg	cacctacaca	aatgagacac	11640
agacacaggt	cgtgaggatt	taggcaacgc	aggcttgtct	ttatagttac	aaacatggga	11700
gcgtgcacct	ggaagatgca	gctggggtag	atctttacat	ctttacaggg	cgcagcgggc	11760
gccagacact	gaagggcaga	gttcacggcg	ggcacctccc	agaggggagcc	caccagcccc	11820
tacctggcca	cggcc					11835

<210> 31

<211> 2337

<212> DNA

<213> Plasmodium falciparum antigen

<400> 31

aaaaaagaaa	attataaata	aatatatata	ttcgtgtaaa	aataagtaga	aaccacgtat	60
attataaatt	acaattcatg	atgagaaaat	tagctatttt	atctgtttct	tcctttttat	120
ttgttgaggc	cttattccag	gaataccagt	gctatggaag	ttcgtcaaac	acaagggttc	180
taaatgaatt	aaattatgat	aatgcaggca	ctaatttata	taatgaatta	gaaatgaatt	240
attatgggaa	acaggaaaat	tggtatagtc	ttaaaaaaa	tagtagatca	cttgagaaaa	300
atgatgatgg	aaataataat	aatggagata	atggtcgtga	aggtaaagat	gaagataaaa	360
gagatggaaa	taacgaagac	aacgagaaat	taaggaaacc	aaaacataaa	aaattaaagc	420
aaccagggga	tggtaatcct	gatccaaatg	caaaccctaa	tgtagatccc	aatgccaaacc	480
caaatgtaga	tccaaatgca	aaccctaatg	tagatccaaa	tgcaaaccct	aatgcaaacc	540
caaatgcaaa	cccaaatgca	aaccctaatg	caaaccctaa	tgcaaaccct	aatgcaaacc	600
caaatgcaaa	cccaaatgca	aaccctaatg	caaaccctaa	tgcaaaccct	aatgcaaacc	660
caaatgcaaa	tcctaatagca	aaccctaatg	caaaccctaa	cgtagatcct	aatgcaaacc	720
caaatgcaaa	cccaaatgca	aaccctaatg	caaaccctaa	tgcaaaccct	aatgcaaacc	780
ccaatgcaaa	tcctaatagca	aatcctaata	ccaatccaaa	tgcaaaccct	aatgcaaacc	840
caaacgcaaa	cccaaatgca	aatcctaata	ccaatccaaa	tgcaaaccct	aatgcaaacc	900
caaatgcaaa	cccaaatgca	aaccctaatg	caaaccctaa	taaaaaacaat	caaggtaatg	960
gacaagggtca	caatatgccca	aatgacccaa	accgaaatgt	agatgaaaat	gctaattgccca	1020
acaatgctgt	aaaaaataat	aataacgaag	aaccaagtga	taagcacata	gaacaatat	1080
taaagaaaat	aaaaaattct	atttcaactg	aatgggtccc	atgtagtgta	acttgtggaa	1140
atgggtattca	agttagaata	aagcctgggt	ctgctaataa	acctaagac	gaattagatt	1200
atgaaaatga	tattgaaaaa	aaaatttgta	aaatggaaaa	atgttccagt	gtgttttaag	1260
tcgtaaatag	ttcaatagga	tttaataatg	tattatcctt	cttgttcctt	aattagataa	1320
agaacacatc	ttagtttgag	ttgtacaata	tttataaaaa	tatatatact	tttttttctt	1380
aattttcatt	tttctttata	ttttcctatt	taattttatt	ttttgtgaat	atttaattac	1440

gtttgcgatt	aattgtagaa	atatatatgt	atatactata	tttatagaat	gtgttattct	1500
caaaaaaac	aacaaaaaaa	aaaaaaaaaa	aaaaaaaaag	aaaaaaggat	taaaagtaaa	1560
atagttataa	atattttcaa	aaatatattat	aacacaaaaa	atacttcgaa	gttcatttaa	1620
catttttggt	tattttattta	tttatatat	tcattttttac	gtattttatat	tataaaatgg	1680
tgtatcttaa	aaatagtgaa	ctatatatat	aaaatatttaa	tttaaaaaaa	ttataacttt	1740
cttttttatt	tctaaaaata	cttaaaaaatt	atatgttttaa	gaaaggggta	aattataata	1800
tttgtataaa	tataataaca	tagatatatt	aaataaaata	acaaatgtac	tatattttgtg	1860
cataagacgt	atagcgttta	tataatacaa	caatattaat	tgtaataata	tttgtggtag	1920
tgtgaacact	aaaattgata	ataatgatta	taatacagaa	gaaataaaaa	atgaatccaa	1980
tataggattt	acaacaaata	ttcatgaagc	aaaaataatt	caagaaaaga	catatggatt	2040
aataataaac	gataaaataa	agaaagaaga	atatgatgat	tgtaataata	ataataataa	2100
taatattata	atacagataa	gagaagttgg	acttaattat	tttggagata	ctctcgatga	2160
atcgaatcca	tgtaatgatc	ttacaggtat	taatatatgg	gaaagttgtc	ttgtggctag	2220
tcgatgggtt	agcgattttt	ctttacagaa	ttttttttcg	aataaaaaata	ttttagaaat	2280
tggtgctggc	agtgggttgg	ctagtataat	aatattttata	tattctaata	tttaciaa	2337

<210> 32

<211> 729

<212> DNA

<213> Plasmodium falciparum antigen

<400> 32

cgaaaaatat	ttaattatct	aaataaaattt	aattaaaaat	ttttataaca	tatttttattt	60
aagattttat	aataatttaag	ttttaatttc	ttttgatcca	aagtttttaa	taattaaatt	120
tgtagatttt	taattttattt	aatatatcca	aatgaaaaat	cttatcagta	ttttttcttg	180
ctcttttctt	tatcattttc	aataaagaat	ccttagccga	aaaaacaaac	aaaggaactg	240
gaagtgggtg	tagcagcaaa	aaaaaaaaata	aaaaaggatc	aggtgaacca	ttaatagatg	300
tacacgattt	aatatctgat	atgatcaaaa	aagaagaaga	acttggtgaa	gttaacaaaa	360
gaaaatccaa	atataaaactt	gccacttcag	tacttgccag	tttattaggt	gtagtatcca	420
ccgtattatt	aggaggtggt	ggttttagtat	tatacaatac	tgaaaaagga	agacacccat	480
tcaaaatagg	atcaagcgac	ccagctgata	atgctaacc	agatgctgat	tctgaatcca	540
atggagaacc	aaatgcagac	ccacaagtta	cagctcaaga	tgttacacca	gagcaaccac	600
aaggtgacga	caacaacctc	gtaagtggcc	ctgaacacta	aacagctgta	aacttttttg	660
ttaatgggtt	tttttgaaac	acgtgaaaat	aattttttatt	tatgattata	ttatatatat	720
tgctatttt						729

<210> 33

<211> 594

<212> DNA

<213> homo sapiens survivin

<400> 33

atgggtgccc	cgacgttgcc	ccctgcctgg	cagccctttc	tcaaggacca	ccgcatctct	60
acattcaaga	actggccctt	cttgaggggc	tgcgccctgca	ccccggagcg	gatggccgag	120
gctggcttca	tccactgccc	cactgagaac	gagccagact	tgggccagtg	tttcttctgc	180
ttcaaggagc	tggaaggctg	ggagccagat	gacgaccca	tagaggaaca	taaaaagcat	240
tcgtccggtt	gcgctttcct	ttctgtcaag	aagcagtttg	agaattaac	ccttggtgaa	300
tttttgaaac	tggaagagaa	aagagccaag	aacaaaattg	agagagctct	gttagcagaa	360
tgaaaaaatt	ggaagccaga	ttcaggagg	gactggaagc	aaaagaattt	ctgttcgagg	420
aagagcctga	tgtttgccag	ggtctgttta	actggacatg	aagaggaagg	ctctggactt	480
tcctccagga	gtttcaggag	aaaggcaaag	gaaaccaaca	ataagaagaa	agaatttgag	540
gaaactgcgg	agaaagtgcg	ccgtgccatc	gagcagctgg	ctgccatgga	ttga	594

<210> 34

<211> 1605

<212> DNA

<213> homo sapiens survivin

<400> 34

```
gtggcggcgcg cggcattgggt gccccgacgt tgccccctgc ctggcagccc tttctcaagg 60
accaccgcat ctctacattc aagaactggc ccttcttgga gggctgcgcc tgcaccccg 120
agcggatggc cgaggctggc ttcattccact gccccactga gaacgagcca gacttggccc 180
agtgtttctt ctgcttcaag gagctggaag gctgggagcc agatgacgac cccatagagg 240
aacataaaaa gcattcgctc gggtgcgctt tcctttctgt caagaagcag tttgaagaat 300
taacccttgg tgaatttttg aaactggaca gagaaagagc caagaacaaa attgcaaagg 360
aaaccaacaa taagaagaaa gaatttgagg aaactgcgaa gaaagtgcgc cgtgccatcg 420
agcagctggc tgccatggat tgaggcctct ggccggagct gcctggctcc agagtggctg 480
caccacttcc agggtttatt ccctgggtgcc accagccttc ctgtgggccc cttagcaatg 540
tcttaggaaa ggagatcaac attttcaaat tagatgtttc aactgtgctc ctgttttgtc 600
ttgaaagtgg caccagaggt gcttctgcct gtgcagcggg tgctgctggt aacagtggct 660
gcttctctct ctctctctct tttttggggg ctcatttttg ctgttttgat tcccgggctt 720
accaggtgag aagtgaggga ggaagaaggc agtgtccctt ttgctagagc tgacagcttt 780
gttcgcgtgg gcagagcctt ccacagtga tgtgtctgga cctcatgttg ttgaggctgt 840
cacagtcctg agtgtggact tggcaggtgc ctgttgaatc tgagctgcag gttccttata 900
tgtcacacct gtgcctcttc agaggacagt ttttttgttg ttgtgttttt ttgttttttt 960
tttttggtag atgcatgact tgtgtgtgat gagagaatgg agacagagtc cctggctcct 1020
ctactgttta acaacatggc tttcttattt tgtttgaatt gttaattcac agaatagcac 1080
aaactacaat taaaactaag cacaaagcca ttctaagtca ttggggaaac ggggtgaact 1140
tcaggtggat gaggagacag aatagagtga taggaagcgt ctggcagata ctcttttgc 1200
cactgctgtg tgattagaca ggcccagtga gccgcggggc acatgctggc cgctcctccc 1260
tcagaaaaag gcagtggcct aaatcctttt taaatgactt ggctcgatgc tgtggggggac 1320
tggtctgggt gctgcaggcc gtgtgtctgt cagcccaacc ttcacatctg tcacgttctc 1380
cacacggggg agagacgcag tccgcccagg tccccgcttt ctttggaggc agcagctccc 1440
gcagggctga agtctggcgt aagatgatgg atttgatctg ccctcctccc tgtcatagag 1500
ctgcaggggt gattgtttaca gcttcgctgg aaacctctgg aggtcatctc ggctgttctc 1560
gagaaataaa aagcctgtca tttcaaacac aaaaaaaaaa aaaaaa 1605
```

<210> 35

<211> 3107

<212> DNA

<213> homo sapiens melanoma antigen

<400> 35

```
atgatacagt ccaagcacct ggatgatgag tatgagagca gcgaggagga gagagagact 60
cccgcggtcc caccacactg gagagcatca cagccctcat tgacgggtgcg ggctcagttg 120
gcccctcggc ccccgatggc cccgaggtcc cagataccct caaggcacgt actgtgcctg 180
cccccccgca acgtgacct tctgcaggag agggcaaata agttggtgaa atacctgatg 240
attaaggact acaagaagat ccccatcaag cgcgcagaca tgctgaagga tgtcatcaga 300
gaatatgatg aacatttccc tgagatcatt gaacgagcaa cgtacaccct ggaaaagggtg 360
gggtgcaggat gggagcagct ctgtggggga agagcgggca tgggggtgcg gtgaccctgc 420
agccctcaa ggcccagtct ctggagccat ctctcacctc tccgactctg agcttccact 480
gcactggcag tttgactcgt gcttctctgc ctctcctctc gtctctcatg ctctctgagt 540
gtctcgccgt ctggccagggt gggctctcat gcctctgcca gcgtcagctc ccacagcgaa 600
ggctctccgt gtgctgtctt ctctctgccc cgctcacgag tttggattcc ttgctgagga 660
gcagttctaa cccggaatca ctgtctgccg gcaggatgcc cagcatgggg tttggatctc 720
acactctgtt ttctcccca cgtagaagtt tgggatccac ctgaaggaga tcgacaagga 780
agaacacctg tatattcttg tctgcacacg ggactcctca gctcgccctc ttggaaaaac 840
caaggacact cccaggtcga gtctcctctt ggtgattctg ggcgtcatct tcatgaatgg 900
caaccgtgcc agcagggctg tctctgggga ggcactacgc aagatgggac tgcgccctgg 960
gtatgattgg cctctccagc tctctccctc ggtgctatcc tctggccaaa gaggtcctgg 1020
gattgcaata gcctgggtgg ctggcgcaag ggcgtggggg gccctgggct cggtagagag 1080
caaaggatct caccagggcg gatggggaag cgggtgctgga cgctgctcag ccctctctct 1140
gctctgtggc cccagatgac atctaagaga gacagtcaga gtcagggatt ccatcaaata 1200
cctacctggg gcgcccctga ccaacagtc tctggcctct gctgcatgcc caggcctcca 1260
```

cagcgactcc	ccgggggctg	ggaagtcata	gtcatgctag	ggagggcccc	tgccaccgtc	1320
tctgctcatg	gattcctttc	cttgccctca	gggtgaggca	cccattcctc	ggcgatctga	1380
ggaagctcat	cacagatgac	tttgtgaagc	agaagtaagt	atcacctgag	ctaactgcgg	1440
ctctcactcg	agcatccttt	gtgtgctggt	ctggctgaga	aagcagttcc	ctatcccaaa	1500
tcttcaactg	gagggatggg	tgcctctgac	ctgggagtga	gtggcagtgg	ggggtatgcg	1560
agtgtgtggg	gagccgaagg	ccagggcggt	cttgggaaaa	gggagctcac	gtcacctgag	1620
aacacggtgt	ggggtgtgaa	aacggccgcc	atcaccttga	gcacctgccc	tgtagactga	1680
cacaagagtt	ccccctggtt	tacacctaag	gaaccgggag	ctcagagagg	agacgcctct	1740
gagcatggct	cccagctggt	aagggcctca	gcccactctc	cctgattttc	aggccagggg	1800
ccaccctctc	cccgtccctg	gaggacttgc	caacgcacag	gcgcgcatgc	acaccaacaa	1860
agggtcagga	cttgaggagg	atgcctggag	cacgcttctc	ctggctgact	gtttcttctc	1920
ctccagtcgt	ttcctctggt	gggcctctcc	agggctccgc	cggggtgtgg	ccaagacctc	1980
cgaggtgggg	tgtgtcaga	gcagggggcc	tgaagaatgg	ctcctctggt	tacaacacac	2040
ccaacaggaa	gctgggggtca	tcgtgatgag	gggcacaaac	ttgtggcctc	cctacagaca	2100
aatgccttac	atgtggaccc	cctgcacctc	gcgatggctt	ccggggagga	ccaatggcaa	2160
aaggctttga	aggcctcact	tttgcaggca	gaagtcctgg	gagtggggtt	gggaatgagt	2220
gaagggtcgg	aggggcagga	cagtcctctt	ccaggagctg	agctgcggca	tcgggttgag	2280
gaggggcccc	ctggaacca	tccgttcagc	aacaggctctg	cttggctagc	agcaaagttt	2340
actttcctct	catgccaaag	tacctggaat	acaagaagat	ccccaacagc	aaccacactg	2400
agtatgaatt	cctctggggc	ctgcgagccc	gccatgagac	cagcaagatg	agggctctga	2460
gattcatcgc	ccagaatcag	aaccgagacc	cccgggaatg	gaaggctcat	ttcttgaggg	2520
ctgtggatga	tgttttcaag	acaatggatg	tggatatggc	cgaggaacat	gccaggggccc	2580
agatgagggc	ccagatgaat	atcggggatg	aagcgctgat	tggacgggtg	agctgggatg	2640
acatacaagt	cgagctcctg	acctgggatg	aggacggaga	ttttggcgat	gcctggggcca	2700
ggatccccct	tgttttctgg	gccagatacc	atcagtacat	tctgaatagc	aaccgtgcca	2760
acaggagggc	cagcttcttc	tcctggatcc	agtaagagtt	tcggcaccgt	tgacgaactg	2820
cagcgatcct	actggccaag	ccagagcgcc	tcctctcaga	ttccttctcg	acacagcacc	2880
ctaggcggct	tcttctctgtc	agtcggagggt	ggcatgcaag	atgaagctct	ctttgtctct	2940
cccgttttca	ttttgtgctt	ttccttgtgt	tttcatgttt	tgggtatcag	tgttacatta	3000
aagttgcaaa	attaaaaaaaa	aaaaaaaaaaa	aaaaaaaaaaa	aaaaaaaaaaa	aaaaaaaaaaa	3060
aaaaaaaaaaa	aaaaaaaaaaa	aaaaaaaaaaa	aaaaaaaaaaa	aaaaaaag		3107

<210> 36

<211> 2509

<212> DNA

<213> homo sapiens melanoma antigen

<400> 36

ccccactgtc	tgccccgcag	gctgtgcact	gcccttccat	catctggcag	gcccccaaag	60
gtcagccccc	ggtgccacac	gagattccaa	cgtcaatgga	attccaggag	gtgcagcaga	120
cacaggcgct	ggcctggcag	gcccagaagg	ccccactca	catctggcag	cccctgcctg	180
cccaggaggc	ccagaggcag	gctccccctt	tggctccagct	ggagcagccc	tttcagggag	240
ccccgccctc	ccaaaaagcc	gtgcaaatcc	agctaccccc	ccagcaggcc	caggcatcgg	300
gtccgcaage	ggaggtgccc	acactgccgc	tccagccttc	ctggcaggca	ccgcctgcag	360
tcttgagggc	ccagcccggg	cccccggtag	cagcggcaaa	ttttcccctg	ggctccgcta	420
aatcattgat	gactccatca	ggagaatgca	gggcctcttc	tatagaccgc	aggggctcct	480
ctaaagagcg	caggacctcc	tcgaaggagc	gcagggcccc	ttcaaaagac	cgcatgatct	540
ttgtgtccac	cttctgtgct	cccaaggcag	tgtcagctgc	gcgagcacac	ctgccagctg	600
cctggaaaaa	cctgcctgcc	acaccggaga	cctttgtctc	ctcctcaagt	gtcttcccag	660
ctacctccca	gtttcagcct	gcctctctga	atgcctttta	aggccccctc	gctgcctcag	720
agaccccaaa	gtcactgcc	tatgctctgc	aggatccctt	tgcctgtgta	gaggccctgc	780
ctgcagttcc	atgggtccca	cagcccaata	tgaatgcctc	aaaggcatcg	caggcagtg	840
ccaccttctt	gatggctaca	gcagctgccc	cccaggcaac	tgccaccact	caagaggcct	900
ccaagacctc	cgtcgagccg	ccacgccgct	ccggcaaggc	caccgggaag	aagaagcatc	960
tggaagccca	agaggacagc	cgtggccaca	cgctagcctt	tcatgactgg	cagggcccaa	1020
ggccctggga	gaatctaaat	ctgagtgact	gggagggtcca	aagccctatc	caggtctcgg	1080
gtgactggga	gcacccaaac	accccccggt	gcctgagtgg	ttgggagggc	cctagcacct	1140

ccaggatcct	gagtggctgg	gaagggccca	gcgcacccctg	ggccctgagt	gcctgggagg	1200
gcccagagcac	ctccagggcc	ctgggtctct	ctgaaagccc	agggagctct	ctgcccgtag	1260
ttgtgtctga	ggtcgcaagt	gtctctccgg	gatccagtgc	caccagcat	aattccaagg	1320
tggaggcaca	gcccttgtct	cccttggtatg	agagggcaaa	tgcgttggtg	cagttcctct	1380
tagtcaagga	ccaagccaag	gtgcctgtcc	agcgctcgga	gatggtgaaa	gtcatcctcc	1440
gagagtataa	agatgagtgc	ttagatatca	tcaaccgtgc	caacaataag	ctggagtgtg	1500
cctttggtta	tcaattgaaa	gaaattgata	ccaaaaacca	cgcttatatt	atcatcaaca	1560
agctgggcta	ccatacagg	aatttgggtg	catcctatct	agacaggccc	aagtttggcc	1620
ttctgatggt	ggtcttgagc	ctcatcttta	tgaaaggcaa	ctgtgtcagg	gaggatctga	1680
tctttaattt	tctgttcaag	ttagggttgg	atgtccggga	gacaaacggt	ctctttggaa	1740
atactaagaa	gctcatcacc	gaagtgtttg	tcaggcagaa	gtacctagag	tacaggcgaa	1800
tcccttacac	tgagcccgca	gagtatgagt	tcctctgggg	ccctcgagca	ttcctggaaa	1860
ccagcaagat	gcttgtcctg	aggtttttgg	ccaagctcca	taagaaagat	ccacagagct	1920
ggccattcca	ttacctgaa	gcgctcgag	agtgtgagt	ggaagacaca	gatgaggatg	1980
aacctgacac	cgggtgacag	gccacggcc	ccaccagcag	gccccctccc	cgctaatagg	2040
tgtagcagag	atctcgctcc	tgtgtttccc	tggccagagg	ccactgacag	gggtgggggga	2100
catttttgtt	cctgggtgtt	gtgttccagt	tccacgagt	taagtttga	ttttcaactt	2160
ggtttcgtat	ctgccaagc	tttgtacatt	ttttatgtgg	tggtgatttc	aatcggttac	2220
tgttctgttc	tgtattttgg	catctgtgtt	tttaagttag	atctgtggtt	ctctgttttg	2280
tgttataatt	gttatgtttt	ggtatcagct	ttgtgctggc	tttgtgaaat	gaattgagaa	2340
gctatccatc	tcatttctgg	tatagttcat	gtagcattgt	aatcggttgt	tctttgaacg	2400
ttcaaagtac	tcacagtaa	aaactgtcta	cagagaagta	aatatctata	tctatatata	2460
taaatatact	ttcagcataa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa		2509

<210> 37

<211> 1782

<212> DNA

<213> homo sapiens melanoma antigen

<400> 37

agtgttgcaa	ctgggcctgg	catgtttcag	tgtggtgtcc	agcagtgtct	cccactcctt	60
gtgaagtctg	aggttgcaaa	aggactgtga	tcatatgaag	atcatccagg	agtacaactc	120
gaaattctca	gaaaacagga	ccttgatgtg	agaggagcag	gttcaggtaa	acaaaggggtg	180
ccacatctcc	tgcctttctg	ctcactttcc	tgcctgtttt	gcctgaccac	agccatcatg	240
cctcggggtc	agaagagtaa	gtccgtgtct	cgtgagaaac	gccgcaaggc	gcgagaggag	300
accaggggtc	tcaaggttgc	tcacgccact	gcagcagaga	aagaggagt	cccctcctcc	360
tctcctgttt	taggggatac	tcccacaagc	tcccctgtctg	ctggcattcc	ccagaagcct	420
cagggagctc	caccaccac	cactgtgtgt	gcagctgtgt	catgtaccga	atctgacgaa	480
ggtgccaat	gccaagggtga	ggaaaatgca	agtttctccc	aggccacaac	atccactgag	540
agctcagtca	aagatcctgt	agcctgggag	gcaggaatgc	tgatgcactt	cattctacgt	600
aagtataaaa	tgagagagcc	cattatgaag	gcagatatgc	tgaaggttgt	tgatgaaaag	660
tacaaggatc	acttactga	gatcctcaat	ggagcctctc	gccgcttgga	gctcgtcttt	720
ggccttgatt	tgaaggaaga	caaccctagt	ggccacacct	acaccctcgt	cagtaagcta	780
aacctcacca	atgatgaaa	cctgagcaat	gattgggact	ttcccaggaa	tgggcttctg	840
atgcctctcc	tgggtgtgat	cttcttaaa	ggcaactctg	ccaccgagga	agagatctgg	900
aaattcatga	atgtgttggg	agcctatgat	ggagaggagc	acttaatcta	tggggaaccc	960
cgtaagttca	tcaccaaga	tctggtgcag	gaaaaatata	tgaagtacga	gcagggtgcc	1020
aacagtgate	ccccacgcta	tcaattccta	tgggggtccga	gagcctatgc	tgaaaccacc	1080
aagatgaaag	tcctcgagtt	tttggccaag	atgaatggtg	ccactccccg	tgacttccca	1140
tcccattatg	aagaggtctt	gagagatgag	gaagagagag	cccaagtcgg	atccagtgtt	1200
agagccaggc	gtcgactac	tgccacgact	tttagagcgc	gttctagagc	ccatttcaga	1260
aggctcctcc	accccatgtg	agaactcagg	cagatgtttc	actttgtttt	tgtggcaaga	1320
tgccaacctt	ttgaagtagt	gagcagccaa	gatatggcta	gagagatcat	catatatatc	1380
tcctttgtgt	tcctgttaaa	cattagtatc	tttcaagtgt	ttttctttta	atagaatgtt	1440
tatttagagt	tgggatctat	gtctatgagc	gacatggatc	acacatttat	tgggtgctgcc	1500
agctttaagc	ataagagttt	tgatattcta	tatttttcaa	atccttgaat	cttttttggg	1560
ttgaagaaga	agaaagcata	gctttagaat	agagattttc	tcagaaatgt	gtgaaagaac	1620

```
ctcacacaac ataattggag tctttaaata gaggaagagt aagcaaagca tgtcaagttt 1680
ttgttttctg cattcagttt tgtttttgta aaatccaaag atacatacct ggttgttttt 1740
agccttttca agaatgcaga taaaataaat agtaataaat ta 1782
```